The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XXXVII. November 6, 1937 No. 958

Planners of Industry and Commerce

THE grip which the planners have got of this country, and the lengths to which they hope to extend it, were forcibly illustrated by the presidential address which Sir Josiah Stamp delivered to the Institute of Public Administration last week-end. He took for granted the wide range of governmental and public control of economic life that had developed even in this conservative country during the last ten years, and gave his definition of the right type of administrator needed for a planned society half way between a *laissez faire* and a totalitarian State.

That is apparently what the planners intend the old country to be—a compromise between individualism and socialism, with obviously a great deal more of the second than of the first. The prospect which Sir Josiah Stamp opened out is a terrifying one, for he was quite clear that the official must be the mainspring of the new society, suggesting, promoting, advising, at every stage. He ruled out as administrators of the planned business of the future two entire classes—the exactly-trained Civil Servant, and " the forceful, push-and-go business man of the single management type, accustomed to fixing his goal and achieving it in a competitive world." These are the classes, be it remembered, which have built up a Civil Service and a national system of industry and commerce which are the admiration and envy of the world.

As far as these classes, hitherto regarded as indispensable to public and private enterprise are to be allowed to exist in Sir Josiah Stamp's planned economy, they are to be subject to a new type of super-official exercising virtually uncontrolled power. Nothing could better illustrate the revolution Sir Josiah Stamp has in mind than his declaration that " the time when the amateur control was all-wise for either seeing or saying what ought to be done, and the official's job was to do what he was told, was now completely past." This is a most sinister threat, and is indeed a challenge to the British citizen's inherited conception of his national institutions. The democratic system, with popular representation in Parliament and a Cabinet of Ministers to supervise administration, goes by the board. The official becomes supreme.

The post-war tendency of the bureaucracy to claim the right of independent action has been very severely handled by the Lord Chief Justice in his classic volume, *The New Despotism*. Fortunately, Lord Hewart was able to show that the High Court of Justice was in a position to rectify the worst of the abuses which had been allowed to creep into Departmental practice. It may be that Sir Josiah Stamp, for all the ingenuity of his analysis of current tendencies, has overlooked the supreme bulwark of the free and independent British citizen, the Common Law of England. Although Sir Josiah Stamp was airing his ideas in the very citadel of officialdom, it is surprising that he should not even have mentioned the existence of Parliament and the Ministry. That he could have ignored it only shows how far the ambitions of the planners have carried them. There could also be no plainer warning of the dangers inherent in the present position.

Business struggles along as best it may, enmeshed in a giant spider's web of tariffs, quotas, marketing boards, currency and investment restrictions, most of which have either to be scrapped or varied because of their palpable imperfections. It is hampered by official actions at every turn, and to embed it still further in the bureaucratic structure would gravely imperil its future in a competitive world. For Great Britain can only maintain its present standard of living, and incidentally carry such burdens as the re-armament programme, by maintaining and extending its overseas trade. Officials may stifle competitive individualism within the realm, but export trade has to fight an unceasing battle with the rest of the world.

Fortunately, the planners, presumptuous as they are to control the economic fabric, have no standing in the world of criticism. A free Press still exists and it has the power to expose their pretensions before it is too late. Parliament remains extraordinarily supine in face of such threats to its supremacy, but it is incredible that public opinion should accept the views of Sir Josiah Stamp, able and eminent economist as he is, without a fight against tendencies which are inimical not only to the material interests of the nation, but to its most deep-seated convictions.

Notes and Comments

Enzyme Activity

THE name " enzyme " was first given to those unknown substances formed by the living cell which caused reactions occurring in living organisms. Their mode of action was recognised to be analogous to that of a catalyst in inorganic chemistry, but until a few years ago the chemical nature of enzymes remained quite unknown. Dr. John H. Northrop, of the Rockefeller Institute of Medical Research, U.S.A., was recently awarded the Chandler Medal of Columbia University for fundamental discoveries concerning bacteria, the constitution of proteins, and the chemistry of digestion. In the Chandler lecture following presentation of the medal, Dr. Northrup described the isolation and crystallisation of

the proteolytic enzymes, pepsin, trypsin, chymo-trypsin and carboxypeptidase, which have the general composition and properties of proteins. A salient feature of the experiments described was the deduction that activity is a property of the protein molecule itself. Information was obtained by studying changes in the molecule (formation of acetyl derivatives) which affect the activity. It was shown that a slight change in chemical structure is sufficient to transform an inert protein into an active enzyme. This work demonstrates that the activity of an enzyme depends upon the structural configuration of the protein molecule, perhaps in a similar way as optically active modifications. Unfortunately, owing to the extreme complexity of the protein molecule, it is impossible, at present, to determine the structural configuration of the whole molecule.

Durability of Paint Films

IN addition to considerations of colour, colour fastness, gloss, texture, and ease of application, the paint user naturally places great importance on the length of life of the paint coating when applied. There are many paint compositions which are entirely satisfactory from every point of view except that they are liable to develop cracks, checking, chalkiness, and finally flaking, in a comparatively short space of time. Dr. G. F. New in a communication to the current issue of the Journal of the Oil and Colour Chemists' Association, has shown that some metallic soaps have a retarding effect upon the incidence of chalking. The metallic soaps studied were tin oleate, tin resinate and chromium oleate. The increased life of a paint of given composition before chalking varied from half as much again to double on addition of a solution of chromium oleate in white spirit. Although the tin soaps produced retardation in chalking with some compositions the paint films obtained showed a tendency to check or crack. The work described was concerned with paints containing titanium dioxide, but it is pointed out that there is no reason to suppose that the beneficial effects of the treatment are confined to such paints.

Coal Consumption

COAL, the most valuable raw material which this country possesses, has always been the subject of investigations directed towards winning of the material, purification and utilisation. Great progress has been made, particularly within recent years, in using coal as a source of oil and chemical products by processes of hydrogenation and low temperature carbonisation. Estimates have been made periodically of the time which our coal resources will last. These all point to such a far distant future that any serious restrictions of coal export have been found to be unnecessary. However, the startling developments in the utilisation of coal by processes such as hydrogenation which consume coal which would otherwise remain unmined render it economically desirable, whatever the magnitude of the coal resources may be, to consider possible substitutes for coal in cases where the material is employed solely as a fuel and its potentialities as a source of valuable products are wasted. The financial feasibility of substituting peat for coal depending mainly upon the costs of production, especially the costs of dehydration and transport, was emphasised by Colonel K. E. Edgeworth at the Institution of Electrical Engineers in Ireland last week. He suggested that the best method of providing a market for peat in the immediate future might be by the erection of power stations equipped for the use of peat fuel. Domestic appliances are not generally suitable for burning peat so that consumption in this direction can only expand slowly. The plan is practicable as far as Ireland is concerned but unless further means of dehydration and reduction of transport costs are attained, there is little hope of general application. While much attention has recently been paid to methods of hydrogenating coal, the hydrogenation of peat has been little considered. This should be worth investigation where peat is available cheaply. It is understood that peat hydrogenation processes are in operation on the continent.

Pipe Bends as Flow Meters

A MINORITY of plant engineers know that a pipe bend can be utilised as the basis of a flow meter. By measuring the difference in pressure between the outside and the inside of the bend it is, nevertheless, possible to obtain a remarkably accurate determination of the quantity of liquid which is flowing in a pipe. This difference in pressure may be as large or even larger than that which is obtained in a Venturi meter or a Pitot tube, and, as in the case of these particular measuring devices, pressure difference varies as the square of the velocity. Using a six inch pipe, in which water is moving at a mean velocity of ten feet per second, a sharp right-angled bend will show a pressure difference equal to about six feet of water. Accuracy in measurement is attained by calibration to meet each individual case. Those who wish to make use of this principal should consult a paper by Varnell and Nagler on the flow of water around bends in pipes, which was read before the American Society of Civil Engineers, in August, 1934. The experiments made by the authors of this paper indicate that the errors likely to be involved are no greater than those which are possible in the operation of the usual measuring devices.

Electron Diffraction and Surface Structure

AN interesting description of the application of electron diffraction methods to the study of surface structure was given in the 39th Bedson lecture delivered by Professor G. I. Finch, at King's College, Newcastle. Patterns are obtained on a photographic plate placed in the path of an electron stream which has been allowed to graze the surface of a solid body, and from these diffraction patterns an accurate indication of the surface structure is obtained. It was shown how the diffraction patterns tended more and more towards well defined rings, with decreasing crystal size and more random orientation, until eventually an effect similar to the Debye-Scherrer pattern was obtained. Experiments with thin films of nickel deposited on a copper surface demonstrate that the nickel crystals, beyond certain thickness, orient themselves in directions independent of the original copper crystals, although ordinary microscopic examination indicates a continuance of the original orientation. An important use of electron diffraction experiments is for determining the chemical composition of thin surface films, where ordinary chemical analysis has failed; for example, the composition of the blue film on tempered steel razor blades was successfully determined in the manner. Investigational methods such as these cannot yet be said to be available nor wholly practicable in industry. Not only is the equipment itself of such a specialised nature that its manufacture is "hand-made" and its purchase costly, but its successful operation requires the attention of an expert experienced in the special technique involved.

Colouring Materials in Rubber Compounding

By
T. L. GARNER, M.Sc., F.I.R.I.

THERE are only a few inorganic colours used in the rubber industry to-day, their popularity having largely declined due to the production of superior dyestuffs. Those still in general use include golden and crimson antimony, and red oxide of iron, while vermillion, ultramarine blue, and cadmium colours are used to a smaller extent.

The Antimonies

There are two types of antimony sulphide used in rubber compounding, the pentasulphide, which is known as golden antimony, and trisulphide, which is known as crimson antimony. Both varieties may contain free sulphur, particularly the golden variety where it may be as high as 18 or 19 per cent.; also the latter may contain as much as 50 per cent. plaster of Paris. Usually crimson antimony is supplied free from either plaster or free sulphur, and where these are present the percentage is not usually high. The name "crimson" is a little misleading since varieties commercially available in this type vary in colour from a light orange to a deep crimson.

Obviously in testing antimony sulphides the free sulphur and plaster contents are important both from the price point of view and also as regards the effect of the former on the properties of the rubber mix. The tendency to discoloration which was once a feature of some antimonies is not very marked in varieties sold to-day, but a test is still necessary to ensure that any material bought is free from this objectionable characteristic. There is a tendency to revert to the black trisulphide, particularly in the presence of acidic substances, with disastrous effects on the colour of rubber, and before passing a batch of the pigment it should satisfactorily stand an open steam heat for an hour at a common vulcanising temperature, such as 280° F. followed by cure tests in a standard mixing and comparisons with correct samples of cured rubber. Even slight discoloration should suffice for the rejection of the parcel of colour, otherwise endless trouble will arise in the factory through variation in shade of manufactured products; the trouble will reveal itself particularly in open cured goods, and will not have a serious effect upon press cured articles unless the discoloration is particularly severe.

In older types of mixings not containing organic accelerators the antimonies have an accelerating effect upon the rate of vulcanisation, but when such accelerators are present they do not show this property; nor do the organic accelerators in common use have any adverse effect upon the colour of the pigment. With a few accelerators antimonies retard the rate of vulcanisation, and these include tetra ethyl thiuram disulphide, so that in these cases an allowance must be made in the designing of the mix.

The pigments disperse readily in rubber and have some value apart from colouring, since in many cases they improve the physical properties of the mix and impart good ageing properties.

Red Oxide of Iron

A by-product from the pickle liquors of steel mills, copperas, is the raw material for most of the oxide used by the rubber industry, and this is calcined, the product being washed with dilute sulphuric acid to remove unoxidised iron compounds, and then thoroughly washed with water, filter pressed, dried, and ground. The actual temperature of calcining is important and, depending on this, light or dark shades can be produced.

Testing of iron oxide is important since many varieties have a deleterious effect on the ageing of rubber compounds due to the presence of manganese or copper salts, particularly the former. There should be less than 0.01 per cent. present if good ageing properties are to be obtained. It is also desirable for the oxide to be free from acid or soluble salts, and in a pure oxide the iron oxide content should be in excess of 95 per cent. On the wet sieve test the pigment should pass completely through a 100 mesh sieve, and the residue on a 200 mesh sieve should not exceed 0.1 per cent. Red oxide of iron is not a brilliant colour, but it is relatively inexpensive, and has no ill-effects in compounding; it mixes easily into rubber, and does not affect the properties of any other ingredients in the mix. Consequently a considerable quantity is still used in the rubber industry for ordinary red colours, although dyes have displaced it in those cases where brighter shades are an advantage.

Ultramarine Blue

In rubber compounding the production of good blue stocks has always been a matter of considerable difficulty and ultramarine blue has been used for this purpose for many years. Its production, from correct mixtures of Glauber salt, clay, sulphur, soda, and carbon is a complicated process, but the pigment is marketed at a relatively low price, and is economical in use, except where low gravity rubber goods are required. The pigment gives little trouble in processing, but on exposure to sunlight the unvulcanised rubber is easily surface scorched or prevulcanised in a manner which is not noticed until after vulcanisation; then a darker patch on the article readily reveals the exposed parts and the product is spoiled. All unvulcanised stocks should therefore be kept covered in liners after processing until required for use. With care, ordinary moulded or open cured products can be manufactured of consistent shade, but in sponge manufacture by the ammonia method variations in shade frequently occur. To assist in maintaining good colour by all vulcanisation processes as low a temperature as is practicable should be employed, although good results are possible at temperatures as high as 300° F.

The high price of blue dyestuffs, coupled with the fact that some of these give varying shades, and affect ageing properties, results in ultramarine finding favour still for blue shades, and it is also used in white goods in very small amounts to offset the slight yellowing common to many white mixings vulcanised without it.

Other Pigments

Of the other inorganic pigments vermillion, which is very heavy and costly, has been largely replaced by dyestuffs, with substantial savings in mixed rubber costs. For some applications it finds a limited use, but it is gradually being replaced in all types of compounds.

Cadmium sulphide, which is manufactured in a wide variety of shades from light yellow to deep orange, has also been replaced by dyestuffs for most purposes. During recent times its use as a rubber pigment has been further decreased by the exceptional increases in price due to the demand for cadmium in connection with the rearmament scheme. Chromium green was once popular, but has now been replaced by better ageing dyestuffs which give better colours, and on a volume basis are cheaper.

Dyestuffs

Organic colours for rubber have been vastly improved during recent years, and the range of satisfactory products has been extended until there are many shades available now which were formerly unobtainable. In particular, dyestuffs have advantages over the ordinary pigments in greater brilliance, and in enabling rubbers to be produced of lower gravity because of the comparatively small amount which has to be used. Generally, dyestuffs do not affect the rate of vulcanisation of a mix, and they are satisfactory to use for most purposes; most of them are satisfactory in both press and open steam vulcanising, although some bleed into the wrapping cloths in the latter process to some extent, thus spoiling the

cloths for use with any rubber of a different colour. The colours do not go off badly with high temperature curing, but for the most delicate shades as low a temperature as possible is desirable.

Certain older types of dyestuffs are inclined to bloom to the surface of the rubber, an objectionable feature not met in modern types, and one which can cause endless trouble both in the factory and subsequently. Resistance to acids and alkalis is usually satisfactory, and this is important in many cases, for example in rubber floorings where the colour must withstand repeated washing with soap often containing free alkali.

Suitable Backgrounds for Dyes

Practically every required shade is now available, but to secure the brightest effects a suitable background in the mixing must be provided. This is achieved by incorporating suitable ingredients, such as china clay, lithopone, and titanium dioxide, in the mix, although too much of the last two is inclined to give a milkiness to the colour which may be undesirable. Variations in the background and the judicious use of very small quantities of other materials, such as carbon black, will produce a very wide range of shades from any one dye, and often it will be found possible to match a required shade by some alteration of this kind rather than by purchasing special dyestuffs. For the most brilliant effects good white crêpe should be used with only a little background material, but it is interesting to note that in the case of coloured ebonites smoked sheet gives brighter colours than pale crêpe.

Formerly, the mixing of a dyestuff into rubber required great care in order to ensure maximum dispersion, and hence greatest brilliance. Many dyestuffs now, however, are supplied in the form of pastes in which the dyestuff is dispersed in suitable softening agents. With such products mixing is much easier, and more uniform results are assured, while it is also claimed that purer and clearer shades result; a further advantage is that the powder does not fly about and settle on other rubber, etc., a point of material importance in the factory. Darkening accelerators must, of course, be avoided, and generally the ultra accelerators should be used since these give brilliant colours at low curing temperatures. Where an antioxidant is considered to be necessary this must be very carefully chosen since the majority cause the rubber containing them to be badly stained on exposure to light. This staining is of a yellow or brown shade so that greens and blues are affected more than reds or yellows. In the latter, therefore, an antioxidant might be a suitable ingredient when the same material was quite unsuitable in a blue or green mixing. Again, generally speaking, antioxidants which do not cause this objectionable staining are not the best from an ageing point of view, but there are now available one or two antioxidants which do not stain and at the same time give excellent ageing.

As already indicated it is desirable, for the finer shades, to vulcanise at relatively low temperatures, certainly not over 300° F. Above this, there is often some loss of brilliance due to the rubber discolouring and the background of the mix becoming somewhat yellow. Surprisingly better results may be obtained if vulcanisation is carried out with a fast curing mix at 260° F. or thereabouts.

Testing

In testing dyestuffs comparisons with standard samples in actual rubber mixings provide the best means of checking shades. It is important that cure tests be carried out in a press and also in open steam if the dyestuff is to be employed in either, since the shade in the latter may be quite different to that in the press. In the case of cold cured rubber and for sponge, colour tests must be carried out under actual conditions met in production, and it has already been pointed out that, in the latter case, sponging by means of ammonium carbonate is likely to have an effect on a blue dye. Certain blue dyestuffs give satisfactory colours, but their price is often prohibitive. Not all dyes have good ageing properties, so that before a new type is adopted and during use, tests should be made on mixed rubber containing it to ascertain its effect on the ageing properties of the rubber mix.

Additions to Portland Cement

Effect of Gypsum and Anhydrites

THE extent of the value of anhydrite as an addition to cement has been determined by investigators of the U.S. Bureau of Mines. Anhydrite, the anhydrous form of calcium sulphate, inevitably occurs associated with gypsum, and the percentage varies widely depending on the nature of the deposit and the depth of working. The Bureau has found that anhydrite, used alone, has a definite effect, but is less effective than pure gypsum, as a retarder; about four times as much pure anhydrite as pure gypsum of equal fineness is required to produce the same retardation. Although anhydrite is intrinsically less effective than pure gypsum, yet mixtures of anhydrite and gypsum can be as effective as pure gypsum, and, under suitable conditions, mixtures that contain 25 to 50 per cent. anhydrite should be as effective as pure gypsum. The Nonmetals Division of the Bureau of Mines undertook an investigation of the problem several years ago. The first study was concerned with the chemical behaviour of calcium sulphate in relation to time of setting. As a result of this study, chemical relations were revealed and the important effect of catalytic amounts of water vapour was recognised. The effectiveness of anhydrite relative to gypsum was investigated as regards setting, tensile strength, and compressive strength.

Details of this investigation are reported in U.S. Bureau of Mines Technical Paper 578, "Relative Value of Gypsum and Anhydrite as Additions to Portland Cement," by P. S. Roller and M. Halwer. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. (5 cents).

A Source of Pure Methane

Extraction from Natural Gas

A METHOD of obtaining pure methane from natural gas has been developed by Boomer, Johnson, and Thomas (*Can. Jour. Res.*, 1937, *15*, 360-362). The working of a laboratory purification unit dealing with 40 cubic feet per day is described.

The gas to be treated contained about 91 per cent. of methane, and 3.5 per cent. of ethane and higher hydrocarbons, with traces of sulphur compounds, the remainder being nitrogen, which was not removed. It was first dried by passage through calcium chloride, and then subjected to pyrolysis at 780° C. (optimum temperature), whereby, with a suitably adjusted rate of flow, the methane was entirely unaffected, whilst the whole of the higher hydrocarbons were converted to a mixture of olefines, aromatic compounds, carbon, hydrogen, and carbon monoxide, and sulphur compounds were converted to sulphuretted hydrogen. These products were removed from the treated gas by passage through a system containing a glass wool filter to remove carbon and some of the liquid compounds, soda lime to remove sulphuretted hydrogen, activated coconut charcoal to absorb liquid products and olefines, 95 per cent. sulphuric acid to complete the removal of olefines and unsaturated compounds, and to convert any remaining S compounds to sulphur dioxide, which was absorbed in a scrubber containing caustic soda.

The consumption of materials in the purification was, per 100 cubic feet of gas, 1 litre of commercial 95 per cent. sulphuric acid, 50 gms. of calcium chloride, 80 gms. of soda lime, and 20 gms. of caustic soda, together with 1.5 kW of electric energy.

Recent Developments in Textile Processing

By
A. J. HALL, B.Sc., F.I.C., F.T.I.

CASEIN-WOOL (Lanital), in the large-scale production of which Italy is the pioneer, is now being employed to an increasing extent in admixture with wool, so that some satisfactory quantitative test is necessary whereby the relative amounts of wool and casein-wool can be determined in mixture materials. Unfortunately, while it is easy to differentiate between these two types of fibre qualitatively by microscopic examination (only the wool fibre is covered with easy recognisable epithelial scales), the similar protein composition of the two fibres makes their quantitative estimation more difficult.

Quantitative Tests with Caustic Soda

Recently, P. Larose (*Amer. Dyestuff Rep.*, 1937, *26*, 584) has dealt with this subject and describes a quantitative test which is applicable to the latest type of casein-wool being produced. It consists essentially of treating the mixture material with a solution of caustic soda under such conditions that all the wool is dissolved while only a small proportion (allowance is made for this) of the casein-wool enters into solution. Thus 2 grams of the finely cut-up wool material is immersed for 3 hours in 100 c.c. of a 20 per cent. caustic soda solution maintained at 30° C. The product is then filtered through a 100-mesh screen, the residue washed with water, then with dilute acetic acid, and finally with water so that the residue of casein-wool can then be dried to constant weight at 105° C. and weighed. Since casein-wool under these conditions loses 12.3 per cent. in weight, the residue × 1.14 represents the weight of casein-wool in the mixture; the proportion of wool present can then be calculated by difference after having made suitable allowance for the moisture present.

The necessity for controlling accurately the temperature of the caustic soda solution in the above test is evident from the following data, which give the solubility of casein-wool in 20 per cent. caustic soda at different temperatures:

Temperature.	Solubility of casein-wool in 3 hours.
20° C.	8.2 per cent.
30° C.	12.0 ,, ,,
40° C.	22.0 ,, ,,

Stripping of Vat Dyeings

It has always been obvious to those who strip vat dyes from cotton or rayon materials by immersing them in a hot solution of caustic soda and sodium hydrosulphite that, because vat dyes are applied from this same type of reducing liquor, the stripping is accompanied by a re-dyeing. The net result of the stripping process is thus dependent on the relative rates at which the vat dye is removed from and then re-absorbed by the cotton material. Actually, in large-scale practice it is generally necessary to strip two or three times in separate baths if the dyed shade is moderately heavy.

To assist stripping it has been recommended to add to the alkaline reducing liquor small proportions of various textile auxiliaries such as Peregal O, Tetracarnite, Lissapol, etc., and these do help in obtaining a more efficient stripping, although they do not completely prevent re-absorption of the stripped dye. Their beneficial action is probably due to their dispersing action, especially in so far as they can reduce the size of the dye particles within the fibre and so facilitate their migration into the dye liquor. But according to B.P. 409,336, such a stripping process can be much improved by adding a magnesium salt to the stripping liquor towards the end of the treatment. Obviously the purpose of this addition is to form a magnesium complex with the reduced vat dye so that that portion stripped from the fibre cannot again be re-absorbed.

The stripping bath is prepared with caustic soda and sodium hydrosulphite (4 parts of each per litre) and a protective colloid such as glue or a degradation product of albumen (for example, lysalbinic and protalbinic acids), but preferably with a synthetic product as Peregal O (I.G.). After stripping at 95 to 100° C. has proceeded for half-hour, there is then added 10 parts of magnesium sulphate or chloride perl itre and the stripping continued for a further half-an-hour.

The action of the magnesium salt can be increased by a simultaneous addition of the calcium salt of dimethyl-phenyl-benzyl-ammonium sulphonic acid—a complex organic compound which has the special property of forming insoluble compounds with leuco vat dyes.

Iodine Test for Mercerised Cotton

An interesting research by Garkuscha (*Textilber*, 1937, *18*, 622) has shown that if the usual iodine test for mercerised cotton is carried out with a very dilute solution of iodine (say, N/400 or N/500), instead of the very concentrated solutions (say, 10 per cent.) now generally employed, it is the non-mercerised cotton (not the mercerised) which absorbs more iodine. It appears that in concentrated idoine solutions the mercerised cotton absorbs more iodine, while in very dilute solutions the non-mercerised cotton is more absorbent; the critical dilution at which these relative rates of absorption change over is about N/100, but is dependent to some extent on the presence of any electrolyte.

Garkuscha has described a method for determining the degree of mercerisation of a cotton material by steeping it (2 grams) at 22° C. for one hour in 40 c.c. of a N/400 solution of iodine and then determining the absorbed iodine by titration of the residual liquor with a standard thiosulphate solution. The following data indicate the sensitivity of the method:—

Pre-treatment of cotton.	*Iodine absorption.* Grams of iodine per kg. of cotton.
Raw cotton.	4.32
ditto purified by a soda ash boil followed by washing, souring, and washing ...	1.79
ditto purified by a caustic soda boil followed by washing, bleaching, and washing (A)	1.94
(A) after mercerising with 53 Tw. NaOH	2.49
ditto after large-scale mercerisation ...	3.36

On the whole, it would seem that Garkuscha's method is not so sensitive as that of Schwertassek (*Textilber.*, 1931, *12*, 457), which uses a concentrated iodine solution. The interesting point, however, is that it is now known that mercerised cotton is less reactive than non-mercerised cotton towards iodine solutions provided that these are used sufficiently dilute.

Continental Chemical Novelties

Exhibits at the Paris International Exhibition

THE chemical exhibits at the Paris International Exhibition include a few novelties. In the pavilion devoted to plastic materials fluorescent plastics rendered luminous by activation with ultra-violet light are exhibited. The chemistry of nicotine is presented in an attractive manner in the tobacco pavilion by a unique collection of nicotine derivatives, which include nicotine chlorozincate, the double chloride of tin and nicotine, nicotine silicotungstate, the iodide of propyl nicotine, and iodonicotine. In the German pavilion prominence is given to the chemistry of hormones and their synthetic preparation, notably the application of cholesterol to the synthesis of androsterone and testosterone.

Letter to the Editor

Oil Production Costs

SIR,—We have read with very great interest Dr. Freeman's exposition of the process, which he referred to in his letter published in THE CHEMICAL AGE of October 9. As the company responsible for the commercial development of this process we think it only right to point out that Dr. Freeman's estimate of cost of production of oil from coal yielding 30 gallons per ton at 4.4d. per gallon is really more than liberal, because on this basis he is charging himself with the whole of the ton of coal treated, whereas in fact in this treatment there is only a maximum of 8 cwt. per ton used up or made useless for marketing purposes, leaving 12 cwt. per ton of an exceedingly high class residual smokeless fuel, which will command a price in any market at least as high as, if not higher than, the standard smokeless fuels of to-day.

We do suggest, therefore, that in taking an actual commercial cost of production the process should only charge itself with the 8 cwt. of coal that is used up, and on this basis the cost of production would be reduced to the 2d. per gallon that Dr. Freeman estimates as the cost for the much higher yielding coals and cannels that are available for treatment in this country. In taking a 30 gallon yield he is to all intents and purposes selecting a bituminous coal, which gives the lowest yield of any in this country that can be said to be economic to treat. In this connection it is interesting to note that there are cannel coals in North Wales, which would give a cost of production very much less than the 2d. per gallon upon which Dr. Freeman has based himself.—Yours faithfully,

H. P. HOYLE.

Coal-Oil Development (Gt. Britain), Ltd.,
20/21 Tooks Court, Cursitor Street, London, E.C.4.

Society of Glass Technology

21st Anniversary Meeting at Sheffield

THE Society of Glass Technology will hold its 21st anniversary meeting at Sheffield, November 9 and 10. By the invitation of the Glass Research Delegacy of the University of Sheffield, the Society will participate in the foundation block laying ceremony at the new buildings of the Department of Glass Technology, Elmfield, when a glass casket containing records will be inserted in the wall by Professor W. E. S. Turner, and the foundation block will be laid by Mr. Geoffrey L. Pilkington. The presidential address to the Society will be delivered by Professor W. E. S. Turner in the chemistry lecture theatre, the University.

The technical sessions will be held in the Mappin Hall, the University, St. George's Square, Sheffield, on November 10. Papers to be presented include "The composition and properties of the chief types of commercial glasses" (Professor Dr. G. Keppeler, Technische Hochschule, Hanover, Germany), "The adherence of aluminium to glass and technical applications thereof" (Dr. Bernard Long, Glaceries de Saint Gobain, Chauney and Cirey, Paris), "Statistical methods in the glass factory" (Professor Dr. J. A. de Artigas University of Madrid), "The calculation of the physical properties of glass: refractive index" (Professor P. Gilard and L. Dubrul, University of Liége, Belgium), "The viscosity of the soda-silica glasses and its bearing on their constitution" (E. Preston, Sheffield), "Physical property-temperature relationships; their bearing on the nature and constitution of glass" (E. Seddon, Sheffield), "The effect of transverse scratches on the strength of sheet glass" (A. J. Holland and Professor W. E. S. Turner), "Some observations on the influence of surface tension on processes in the melting of glass" (Dr. H. Jebsen-Marwedel, Germany), "Some new views on the nature of glass" (J. E. Stanworth, Chesterfield).

Fison, Packard and Prentice, Ltd.

Criticism of the Land Fertility Scheme

THE 43rd annual general meeting of Fison, Packard and Prentice, Ltd., fertiliser manufacturers and maltsters, was held at the registered office of the company, Ipswich, on October 29.

Mr. F. G. C. Fison, the chairman, referred to the Government Land Fertility Scheme under which basic slag and lime are subsidised. He suggested that the majority of independent experts would have preferred a more balanced scheme under which the farmer could have been free to choose the fertiliser most suited to his land under the advice of the county agricultural organisers. Efficient safeguards could have been provided to ensure that the whole benefit of the subsidy would have been enjoyed by the farmer. The existing proposals have resulted in a largely increased demand for basic slag, and for lime, but it is questionable whether the farmer will reap the full benefit unless he makes a very careful calculation of the relative values of comparatively insoluble phosphates in basic slag and of soluble and available phosphates in other forms.

Expansion of Interests

Continuing, Mr. Fison said that in the spring the company acquired a controlling interest in the Anglo-Continental Guano Works, Ltd., owning fertiliser works at Goole, Barking, London, Southampton, Plymouth, and Bristol, in addition to other important interests. Fison, Packard and Prentice, Ltd., have acquired all the ordinary shares and 60 per cent. of the 7½ per cent. cumulative preference shares, and are thus provided with further points of manufacture and distribution which will enable them to give better and more economical service to their customers. The Plymouth and Bristol factories had been transferred to National Fertilisers, Ltd., which was formed to co-ordinate interest in the West of England with the fertiliser interests of the Imperial Smelting Corporation. They were now planning further important factory extensions in Lincolnshire in conjunction with the West Norfolk Farmers Manure and Chemical Co-operative Co., Ltd., for the production of joint requirements. For this purpose a company has been registered under the title of Nitrogen Fertilisers, Ltd. He made it clear that the project in which the West Norfolk Farmers Manure and Chemical Co-operative Co. and Fison, Packard and Prentice, Ltd., are working together, however, does not involve any merger or acquisition of interests other than for this particular purpose.

Rat Poison Containing Barium Carbonate

Prosecution Under Poison Rules

AT Thames Police Court, before Mr. John Harris, P. Grizzard, an ironmonger, of Commercial Street, Stepney, was summoned for selling rat poison which contained barium carbonate, without his name being entered in the local authority's list.

Mr. Arthur Fail, who prosecuted for the Stepney Borough Council, said that the defendant was liable to a fine of £50. In view of the fact that the rat poison contained barium carbonate, defendant was not allowed to sell it at all.

Mr. Robert Roper, an inspector employed by the Council, said that he visited the defendant's premises on September 9 and purchased some of the rat poison, which upon analysis was found to contain 13 per cent. of barium carbonate.

The defendant had written a letter to the magistrate, in which he said that he bought the rat poison in an L.M.S. Railway salvage sale, not knowing that it contained barium carbonate. He had since withdrawn the stock.

The magistrate dismissed the summons under the Probation of Offenders' Act, on payment of two guineas costs.

The Coking of Coal by Electricity

A New Process Utilising Off-peak Current

A NEW process for the electrical carbonisation of coal which may come in for serious consideration as an economically important use for coal is described by H. Stevens in the November issue of *The Scientific American.*

In this electric process a mass of 30 tons or more of coal is placed in a retort, with a " starting fuse " as a core. The fuse, consisting of coke particles, is necessary because soft coal is not a good conductor of electricity. Carbonisation is begun by passing electricity through this fuse, thus heating it and the surrounding coal to drive off the gas and tar. The coal immediately surrounding the fuse which thus becomes coke is a better conductor of electricity than the starting fuse. In the starting fuse the resistance to electricity is high because of poor contact between loose coke particles, but the newly formed ring of coke is melted together and makes a continuous path for the electric current. On further heating, this ring of coke shrinks and cracks, but not until a new outer layer of coal is carbonised. Each newly formed tubular ring of coke offers easier passage for the current. In this manner, the heat travels radially outward, always being electrically generated adjacent to the raw coal. This growth continues until the entire mass of coal is carbonised.

The main product of carbonisation is coke. The by-products—gas and tar—can be recovered when coal is heated in a retort from which air is excluded. The electric carbonisation retort is air-tight, cylindrical in shape, and set up vertically on a steel base raised on concrete piers. The steel retort shell is lined with fireclay brick. Circular steel plates, also fireclay lined, serve as top and bottom covers through which pass the electrodes carrying the current. Only the upper electrode is electrically insulated. Current is supplied to these electrodes through a transformer, and they, in turn, make contact with the starting fuse, establishing an electric circuit.

In operation, the bottom cover is first put into place, and the starting fuse of coke particles in a metal pipe is set on the bottom electrode. Then the retort is entirely filled with coal, after which the metal pipe is withdrawn and the top electrode is placed in position. The top cover seals the retort. Electricity is then turned on and the evolution of gas follows immediately. This gas passes through the mass of coal and leaves the retort by suitable outlets, passing into collecting mains. After the coal is carbonised, the top cover is raised and any residual gas is ignited as it escapes. The bottom cover is then opened and the hot coke falls by gravity into the conveyor where it is quenched and loaded directly into trucks.

Results from a typical 20-hour run of the 30-ton retort built by The Detroit Edison Co. show that from one short ton of moist Pittsburgh seam coal there were obtained 10,000 cu. ft. of gas with a heating value of 525 B.Th.U. per cu. ft., 15 gallons of tar, and 1,400 lb. of coke. These yields are slightly better than the results of tests made by The American Gas Association on Pittsburgh seam coal carbonised in by-product ovens.

Advantages of the Electric Process

There are several outstanding differences between electric carbonising and the by-product method now in general use. The main advantage of the electric process is that it utilises the principle of heating a mass of coal directly from within, whereas in the by-product method the heating is done from the outside. Mass production of coke, gas, and tar is possible in electric carbonising on a scale many times greater than that of the by-product oven. The electric process uses large-capacity retorts built with a small initial investment. In the by-product method, smaller capacity ovens require greater capital outlay. In the electric process, maintenance and operating costs are lower and the temperature and rate of heat travel are readily controlled, making for greater flexibility in operation to meet consumers' demands. The advantages of the electric process promises to increase the market for coal.

The electric process also has the advantage of requiring a much smaller initial investment. In the first place, the design of the plant is very simple. The electric process does not use the complicated system of vertical and horizontal flues, heat regenerators, burners, and valves required for the by-product oven. Nor is a mechanical pusher necessary for discharging the electric retort. Such a pusher is indispensable with by-product ovens. The elaborateness of these latter ovens may be shown by the fact that over 500 different shapes of brick are needed in their construction, whereas in the electric retort only a dozen different shapes are required. Then there is the matter of ground area to consider. In the by-product oven plant, one-eighth of the area is occupied by coal, the balance being taken by the pusher, brick walls,

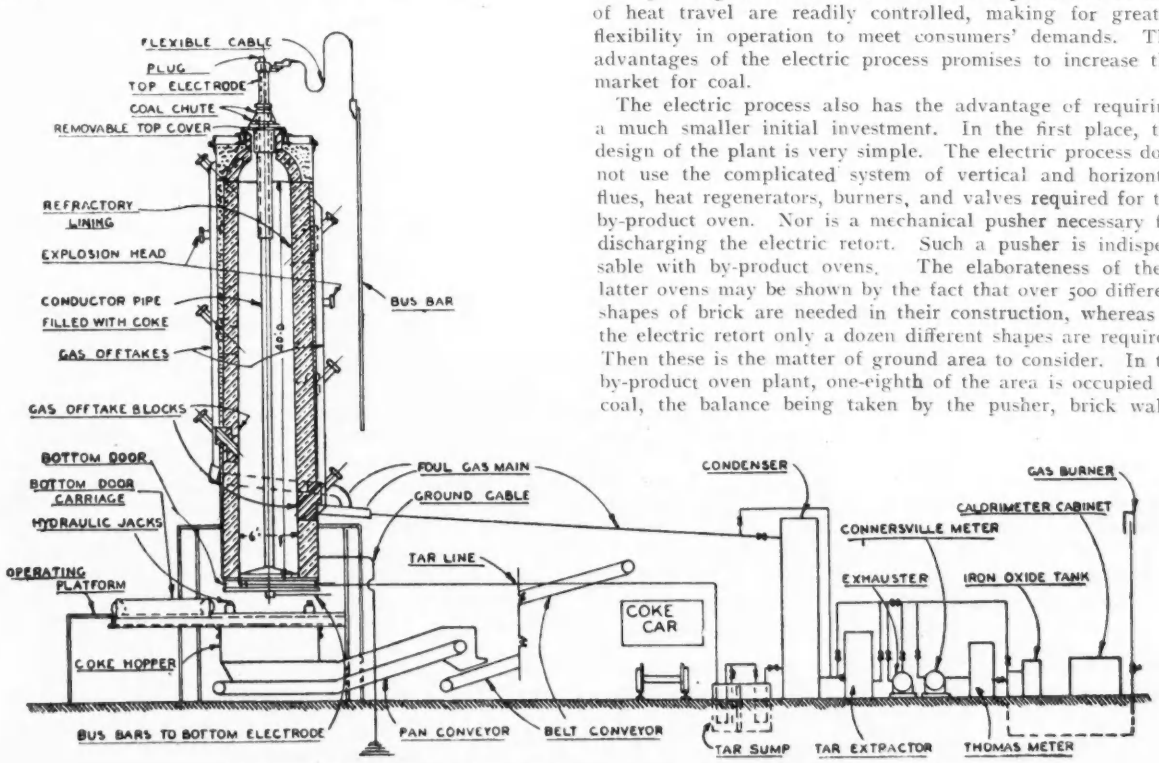
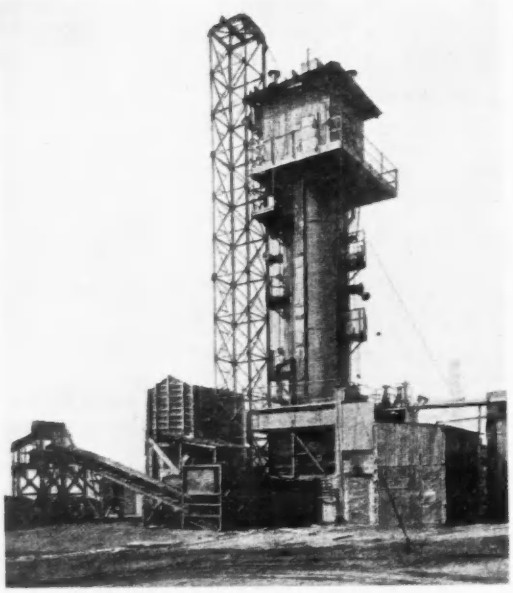


Diagram of the electrical coke plant, with a cross-section of the retort.

flue, stack, and so on. In the electric process plant, the coal occupies about half the area, the balance being used for retort wall and electrical equipment.

Maintenance costs are lower in the electric process, because the equipment is not subjected to high temperatures, and the wear and tear on the fireclay brick and electrodes are practically nil. Furthermore, operating costs are lower because electrical operation makes this process practically automatic. By-product oven walls are built of silica brick which expand enormously on heating, but the use of silica brick is necessary as this material will not soften or melt under the intense external heat necessary in these ovens. Before by-product ovens can be charged with coal, they must be slowly dried out and brought up to a white heat. This takes many months. The rate of heat travel in the by-product oven depends very largely on the thermal conductivity of the silica brick. After the heat passes through the wall, the rate of heat travel in the coal charge averages about one inch per hour—measured on the oven width. The fixed character of the thermal conductivity of silica permits of little control



Detroit Edison gas retort.

over the rate of heat travel. Also, the enormous mass of brick work will not allow of ready changes in its temperature.

In the electric retort, the current flows through the charge of coal. Heat in the electric process is generated adjacent to the uncoked coal and is accurately controlled by stepping the voltage up or down at the transformer. Thus, rates of heat travel varying between a quarter of an inch and six inches per hour—measured on the retort diameter—have been achieved at will in the electric process. This flexibility of operation means that the electric process can either yield three times as much tar as the by-product method or else make coke six times as fast as the by-product method. The fact that the electric process operates without a preliminary warming up of the retort and that the evolution of gas can be started or stopped as often as occasion demands enables the electric process to meet hourly, daily, or seasonal demands of the consumer for gas.

Gas from by-product ovens is contaminated by flue gas leaking into the oven. Generally more than 10 per cent. (by weight) of by-product oven gas consists of inert gases—carbon dioxide and nitrogen. This dead material affects adversely many qualities of the gas. It also adds to the cost of distributing it. The electric process makes unadulterated coal gas since the retort has a gas-tight welded steel casing and infiltration of air is impossible. Electric process gas can, therefore, be distributed at a lower cost and be used more efficiently than by-product oven gas as it does not carry the excess baggage of burned gas from oven flues.

With all these advantages, the electric process requires less fuel to do the carbonising than is required in the by-product method. Tests made by the American Gas Association showed that, in the by-product method, 292 lb. of *coke* were required to carbonise a ton of Pittsburgh seam coal. To do the same work, the electric process used 350 kilowatt-hours of electricity, the generation of which by steam power requires about 290 lb. of coal. The Research Department of the National Coal Association in the United States has determined that the user of coal in hand-fired furnaces gets only 45 per cent. of the heat in the coal; it also determined that the user of coke gets 70 per cent. of the heat in coke.

Pre-heating Coal before Carbonisation

Another method for achieving greater mass production and reducing costs in the electric process lies in pre-heating the coal before carbonising. Pre-heating drives off any moisture from coal, thereby increasing its density which in turn increases the mass of coal that can be charged in the retort. Further heating causes coal to become plastic and swell. Swelling of coal in by-product ovens during carbonisation causes grave injury to oven walls, hence pre-heating is not done. However, in the electric process the retort wall is bound with a steel shell which is not distorted by the pressure exerted by swelling coal. Furthermore, such pre-heating reduces the amount of electricity so that only 250 kilowatt-hours are required to carbonise a ton of dried and pre-heated coal. No additional energy is required for pre-heating since this is done by heat now wasted in the steam power electric plant.

This electric process of carbonisation has potential significance for several agencies. For the coal industry, it promises additional use for coal by recapturing part of the fuel market from natural gas and petroleum. For the utilities, it offers possibilities of more efficient use of equipment, thereby reducing costs. For the community, it holds the prospect of less polluted environment by encouraging the use of cheap, smokeless fuel.

Fireclay Bricks

Influence of Water Content of Clay

A STUDY of the influence of the water content of the clay on the spalling of finished fireclay bricks, has been carried out by Bennie (*Trans. Ceram. Soc.*, 1937, *36*, 395-399). Spalling is defined as the inability of a given brick to withstand cycles of temperature fluctuation, or of rapid heating and cooling, when the maximum temperature attained is insufficient to cause any sintering.

Firebricks were prepared from a grog specially mixed so as to have a definite particle size distribution, and a large number of bricks made from it by firing the clay at three different water contents:—(1) 17.3 per cent., "soft plastic"; (2) 11.26 per cent., "stiff-plastic"; and (3) 4.5 per cent., "semi-dry." The fired bricks were tested for crushing-strength, and were then subjected to a series of temperature fluctuations, by heating them in the course of half-an-hour up to 1,050° C., and then cooling them on a cold iron plate. At intervals during this treatment, the cold crushing-strength was measured, its variation being taken as an index of the spalling tendency.

It was found that the crushing-stength of the bricks made from "semi-dry" clay had increased by about 25 per cent. after the first cycle of temperature change, further treatment causing a slight decrease. The strength of the "stiff-plastic" bricks decreased during the first few cycles, and then increased to slightly above the initial value after 10 treatments. The bricks made from the "soft-plastic" clay, which had the highest initial strength, behaved worst in the test, decreasing in crushing-strength continuously during heat treatment.

Coke Oven Managers' Dinner

Technical and Commercial Aspects of Research

THE 22nd annual dinner of the Coke Oven Managers' Association was held at the Hotel Victoria, Northumberland Avenue, London, on October 28, the chair being taken by the President (Mr. G. W. J. Bradley) in the presence of a record attendance.

Sir HAROLD HARTLEY, F.R.S., proposing "The Coke Oven Managers' Association," said the educational work which the Association was carrying out within the industry was a great contribution to the future of the industry because, after all, it was the young men of to-day, who in 10 or 15 years time, would be in control of the industry. Speaking of research and how the application of new discoveries to industry depended on the contact between the scientist and the technical man, he said research was necessary not only in regard to technical processes, but also on the commercial side. Research was the application of scientific principles to the analysis of any problem, discovering the factors which were concerned in that problem and separating them and seeing how they could be brought under control, and just as much could be done in applying these principles to commercial problems—such as distribution—as could be done in applying them to technical problems.

The PRESIDENT, responding, said he doubted very much whether the great British public and even a large proportion of those concerned with national affairs, realised how important the coking industry was. The public had grown so used to using coal in an utterly wasteful manner that any new ideas were extremely difficult to introduce. More research and more co-ordination of research with everyday practice called for a great deal more money. The technical man was only concerned with spending money, not with finding it. His duty was to provide some semi-large-scale plants on which his ideas could be tried before being brought to the works, for it was a very difficult matter to translate laboratory results direct into the works. Pioneers and enthusiasts, however, often found this very difficult because circumstances forced them to produce a balance sheet based on laboratory data. The great need was to work together with a real idea. Many attempts were being made at the present time to form commercial organisations and a great deal of work was being done to that end. On the production side it could be taken that in terms of man-hours, heat units, electrical units, etc., the figures were just about as low as they were likely to be for some time, but on the commercial side there was room for some bold suggestion and bold action.

Mr. J. BRADWELL proposed the toast of the guests, mentioning a large number by name. They included Sir Harold Hartley, Mr. R. W. Foot, Sir Gilbert Morgan, Mr. J. W. Rees, Mr. H. C. Smith, Mr. W. M. Burt, Colonel Bristow, Mr. W. A. S. Calder and Mr. John Benn.

Mr. R. W. FOOT (general manager, Gas Light and Coke Co., and chairman of the London and Counties Coke Association) responding to the toast of "Our Guests," said he looked forward to the time when the gas industry and the coke oven industry would have established a successful partnership in regard to coke.

Mr. W. J. REES (president of the Refractories Association of Great Britain, and head of refractories department, Sheffield University) who also replied, thanked the coke oven industry for the very cordial and friendly spirit shown by it to the refractories industry.

THE Société des Couleurs Zinciques of France has announced that it will operate a new mine for the production of barium sulphate white. The mine is situated in Aveyron and a plant for the grinding and purification of the sulphate has been built alongside it. The pigment produced is of high quality and it is expected that this new development will render the importation into France of this particular pigment to be seriously decreased.

Chemical Club

Urge for Increased Membership

THE nineteenth annual general meeting of the Chemical Club was held at 2 Whitehall Court, London, S.W.1, on the evening of October 28. Mr. H. J. Pooley, chairman of the executive committee, presided.

In presenting the annual report of the executive committee, Mr. J. Davidson Pratt, honorary secretary, said that the membership of the club had increased slightly during the past year. It was an objective of the executive committee to bring in more members, and it aimed at a membership of 600. During the year 31 new members were elected, while resignations and deaths were responsible for a loss of 26 members. Thus there was a net increase of 5, making a total membership of 525 on August 31, 1937. Members were urged to increase their efforts in obtaining further members. During the year, the executive committee had improved the social side of the club and a varied programme of informal talks had been organised. These were of great interest and were enthusiastically received. The club dinner, which was held in April, was very successful, and it is the intention to hold another in the New Year.

The accounts showed a decrease in income of £18, largely due to a reduction in entrance fees. Omitting the cost of redecorations, namely, £166, for which a fund had been raised in previous years, the expenditure showed a drop of £15. The deficit on the year's working was £50, practically the same as the last year. Mr. T. H. Fairbrother, honorary treasurer, in presenting the accounts, pointed out that the position called very clearly for increased membership in order to put the club's finances on a thoroughly sound basis. He took an optimistic view of the future.

The following officers for the ensuing year were then elected: President, Dr. W. R. Ormandy; chairman of executive committee, Mr. J. Davidson Pratt; honorary treasurer, Dr. S. I. Levy; honorary secretary, Mr. F. J. Bullen. Dr. Cox, Mr. T. H. Fairbrother, Mr. G. W. Lacey and Dr. Mitchell were elected to the executive committee. On the proposal of Mr. Davidson Pratt, Professor A. Smithells, a past president, was unanimously elected an honorary member of the club.

The Special Areas

Appeal to Individual Manufacturers

THE *Daily Telegraph* published on Monday a long and arresting article by Mr. John Benn on the next step in the Special Areas. He regards the present position as a challenge to individualist enterprise under vigorous Government lead. The Government was charged by its opponents in the debate on the address in the House of Commons with ignoring the Special Areas. The latest Act, however, provides remedies which, in Mr. Benn's view, should go far to solve the problem. He was the first to make the suggestion that the Special Areas afforded an ideal field for younger directors, who, without the domestic ties of their seniors, could prove their mettle and at the same time perform a public service of the highest value. In his article, he gave examples of new works established in Durham, Lancashire, and South Wales, and found so much encouragement in that experience as to appeal to the individual manufacturer to go and do likewise. He made it clear that his appeal was not made solely on the ground of public spirit. It was also a business proposal, for conditions were almost always found on investigation to be better than anticipated. His suggestion was not that firms should lose money in the Special Areas, but that they should risk it on a handsome scale, and, if necessary, be content with a lower return in the national interest. In his view, it was for the individual manufacturer to prove that business did not lag behind politics in the war on poverty and distress.

New Technical Books

KERAMISCHE WERKSTOFFE. By Dr. Felix Singer. pp. 74. Published by the author, 31 Croham Park Avenue, South Croydon.

This reprint from the "Handbuch der Chemische-technischen Apparate" (edited by Dr. A. J. Kieser) by an acknowledged authority on ceramics is arranged in four sections. The first three sections deal briefly with general fundamentals of ceramic manufacture, the chemical and physical properties of ceramic materials and the fundamentals of design; the fourth section, occupying by far the greater part of the volume is devoted to many well-selected examples of the utilisation of ceramic plant in the chemical industries and is lavishly illustrated with photographs and diagrammatic sketches. At a time when resistant metals and synthetic resins are receiving considerable prominence as chemical plant materials, the work under review is a timely reminder of the indispensable function of stoneware, earthenware, quartz and other ceramic products. The examples of their utility range from pyrites burning, carbon bisulphide manufacture and hydrochloric acid synthesis to earthenware pumps and exhaustors, denitration plants and formic acid-distilling equipment. Containing a mass of information in a surprisingly small compass, the book should receive a unanimous welcome from chemical engineers and works managers.

A HISTORY OF PHARMACY. By James Grier. pp. 274. London: The Pharmaceutical Press. 6s.

Simultaneously with the appearance of Professor Partington's "A Short History of Chemistry" (reviewed in THE CHEMICAL AGE, October 23, 1937, page 336) an equally authoritative short study of the progress of pharmacy has been published. In this book the author has dealt with the early discovery of herbal, animal and mineral remedies, the development of chemistry from alchemy, of pharmaceutical chemistry and the compiling of pharmacopœias, antiseptics and chemotherapy, and many other related matters not hitherto treated in their logical sequence in a single volume. One chapter gives historical sketches of selected drugs; another chapter deals with adulteration and sophistication, thereby providing a new contribution to the study of analytical chemistry. The special history of acids, alkalis and salts, from the pharmaceutical view point, is particularly interesting because it includes a large number of facts and their relevant dates. Originally planned to meet certain needs of the pharmaceutical student, this book cannot fail to appeal to a much wider circle of readers.

GERMAN ASSOCIATION OF ENGINEERS. (Verein deutscher Ingenieure). Supplement for Chemical Engineers, Nos. 3 and 4, 1937. Berlin: VDI-Verlag, G.m.b.H.

The German Association of Engineers publishes a special supplement for chemical engineers. The present issues give most interesting contributions on the lining of big tanks with acid-resisting stoneware, and on acid-resisting filter presses made from ceramic filter plates, etc. This treatment of chemical plant problems from the standpoint of the chemist and the engineer is of great value, as no similar publications exist in the English language.

POTASH DEFICIENCY SYMPTOMS. By Oscar Eckstien, Albert Bruno, and J. W. Turrentine, with the collaboration of G. A. Cowie and G. W. Hoffer. Berlin: Verlagsesellschaft Für Askerbau M.B.H..

This book is bound to appeal to all interested in plant nutrition problems. Practically every crop grown in the world is represented in this publication, and the object is to illustrate the symptoms relating to potash deficiency in such a way that it will be possible for anyone to recognise them in the field and the orchard by an intelligent study of the plant itself. This method of diagnosing plant food deficiencies has much to recommend it and is rapidly gaining in favour. In addition to ordinary photographs, the book contains no less than 54 plates which are reproductions from actual photographs in colour of leaves, blossoms, fruits and other parts of the plant, showing potash deficiency symptoms. The particular points of contrast between normal and potash-starved plants are illustrated in a remarkably clear way by these colour photographs. The text is published in German, French and English, and this will be of great help to instructors and research workers—both in agriculture and horticulture—in practically all parts of the world. The book contains a comprehensive bibliography and is clearly indexed.

REAGENT CHEMICALS AND STANDARDS. By Joseph Rosin, Pp. 530. London: Chapman and Hall, Ltd. 30s.

The ever-growing application of chemical control to industrial processes and products, including food and medicinals, and the recognition of the basic significance of minute amounts of certain elements and their compounds in life processes, have demanded greater exactitude in analytical procedures. Manufacturers of reagents, appreciating these requirements of the analytical chemist, have been on the alert to meet them. They have stimulated and promoted higher standards, and more precise and exact methods of testing, for analytical reagents. The first book on standards and methods of testing reagents was published by Krauch in 1888, under the auspices of the firm E. Merck. Several revised and enlarged editions of Merck's book have since been published, and a translation of the second edition was made available in England in 1914; a similar book of narrower scope was published a few years ago by The British Drug Houses, Ltd. H. L. Murray's "Standards and Methods of Testing of Reagent Chemicals," published in 1919 (second edition 1927) was the first original English contribution to the advancement of reagent chemicals. The American Chemical Society, through its Committee on Analytical Reagents, has also made a momentous contribution to the advancement of quality and methods of testing reagents. The result of its work, published from time to time since 1921, has effectively standardised those reagents (about 130) which they cover, and methods of testing are capable of greater precision than any previously published. In the present volume by the chief chemist and chemical director of Merck and Co., Inc., in the United States, free use has been made of these tests, but in a large number of instances the author has revised or replaced them with newer and more precise methods of testing in accord with more recent knowledge and experience. The present volume is also more comprehensive in its scope than any similar publication. It includes a number of organic reagents which only recently have come into use; also others which have been known for some time, but whose value has not yet been fully appreciated. From practical experience, extending over more than a quarter of a century, it is the author's conviction that an assay, or quantitative determination of the active constituents, is one of the most effective means for checking the quality of a chemical. Nearly 70 per cent. of the reagents described are provided with assays.

New British Mineral

A new British mineral, Russellite, was described by Mr. F. A. Bannister and Dr. M. H. Hey at the anniversary meeting of the Mineralogical Society on Thursday. The new mineral, which occurs sparingly in Cornwall, is a mixed crystal of bismuth and tungstic oxides approximating to the composition $Bi_2O_3.WO_3$. X-ray data indicate that it is not a bismuth-tungstate as at first thought.

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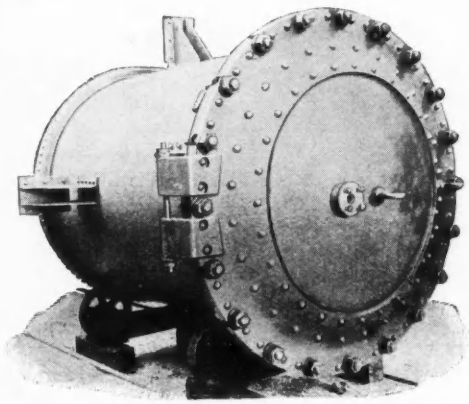

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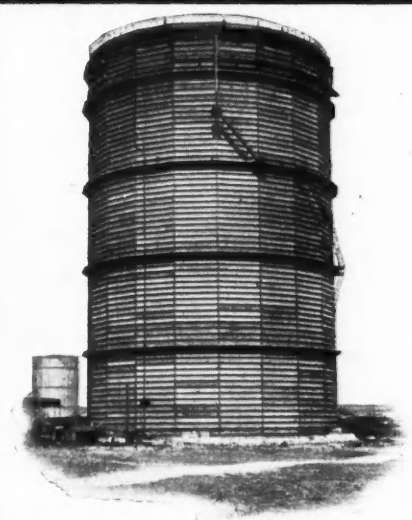

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On the latest scientific and technical developments in the preparation of cellulose and paper. W. Gärtner, *Osterreichische Chem. Ztg., 40,* 450-454.

The structure of cellulose. H. De Witt Smith, *Rayon Text Monthly, 18,* 675-678.

A new cellulosic material: The hydroxyalkyl ethers. T. P. Clemens, *Rev. Univ. Soie Text. Artificiels, 12,* 353-357.

Colloid chemistry in paper making. B. W. Rowland, *J. Phys. Chem., 41,* 997-1,005.

The properties and the distinguishing of cellulosic materials, D. Krüger, *Zellstoff u. Papier, 17,* C33-435.

Bleaching, Dyeing, Finishing

Modern processes for the bleaching of animal and vegetable fibres. Dr. Debrus, *Rev. Générale Matières Colorantes, 41,* 429-432.

Reducing agents in textile printing and dyeing: Glucose. "Technicus," *Textile Colorist, 59,* 667-669, 708.

The peroxide bleach for cotton and for rayon mixtures. H. Baier, *Textile Manuf., 63,* 424-427.

Practical scouring investigations with modern wetting agents. O. Uhl, *Wäscherei u. Plätterei Ztg.*, 1937, 687-691.

Testing by fluorescence. J. A. Radley, *J. Soc. Dyers Colourists, 53,* 376-379.

Prevention of calcium deposits in processing water. B. H. Gilmore, *Rayon Text Monthly, 18,* 707-709.

Testing the fastness of dyeings to heat. K. Schwertasseck, *Melliand Textilber.* (*English ed.*), *18,* 151-152.

Glass, Ceramics

On ceramic colours. R. Hohlbaum, *Glashütte, 67,* 633-634.

The cooling of glasses and artificial resins. E. Jenckel, *Z. Elektrochem., 43,* 796-806. III6

Metals, Electrometallurgy

Contribution to the obtaining of ferrosilicon. E. Liebscher, *Metal u. Erz, 34,* 501-507.

The nickel-copper-magnesium alloys. W. R. D. Jones, *Monthly J. Inst. Metals, 4,* 553-572.

Fats, Oils, Waxes

The swelling of drying oil films in water. J. Rinse and W. H. G. Wiebols, *Ind. Eng. Chem., 29,* 1,149-1,154.

On the appearance of hollow spaces in toilet soaps and its prevention. *Seifensieder Ztg., 64,* 761-763.

Paints, Pigments, Resins

The influence of solvent on the saponification number of rosin. W. C. Smith, *Ind. Eng. Chem. analyt. ed., 9,* 469-471.

The structure of heated resinous films. H. L. Bender, *Ind. Eng. Chem., 29,* 1,130-1,134.

Rubber, Plastics

Powdered materials with an acetate base. R. Vytré, *Rev. Générale Matières Plastiques, 13,* 235-236.

Chemical derivatives of rubber. "G.A.," *Rev. Prod. Chim., 40,* 547-552.

Chemical testing processes for artificial resins. L. Metz, *Kunststoffe, 27,* 267-271.

Miscellaneous

On an improved type of gas calorimeter. W. Courard, *Osterreichische Chem. Ztg., 40,* 445-450.

Researches on the chemistry of coal. W. A. Bone and B. J. A. Bard, *Proc. Roy. Soc., 162,* A, 495-501.

Sugar: Its history and manufacture. *J. Incorp. Brewers' Guild, 23,* 246-255.

Some recent work on gels. H. Freundlich, *J. Phys. Chem., 41,* 901-910.

Applied high temperature heat transfer. W. L. Badger, *Ind. Chem., 13,* 392-394.

The recovery of solvents. "B.R.," *Rev. Générale Matières Plastiques, 13,* 240-244.

Personal Notes

MR. FRANCIS E. POWELL has been appointed a director of Transparent Paper, Ltd.

MR. THOMAS DAVIDSON (76), of Tynemouth, glass manufacturer, has left estate valued £239,985, with net personalty £216,681.

MR. JAMES FAIRLIE, of John and James White, Ltd., chemical manufacturers, Glasgow, has been appointed a governor of the Royal Technical College, Glasgow.

SIR JAMES JEANS has agreed to take the place of the late Lord Rutherford as president at the meeting of the Indian Science Association Congress at Calcutta in January, 1938.

MR. ROBERT STEWART JOHNSON, managing director of Cammell, Laird and Co., has been elected a director of the English Steel Corporation, in which Cammell, Laird and Co. have considerable share interests.

MR. ARTHUR BLAIR, of Saltcoats, a superintendent in the nitro-cotton department of Ardeer explosives factory, Stevenston, has been presented with a wallet of notes from his colleagues on the occasion of retiring after 31 years' service.

MR. GEORGE A. POPE, deputy managing director of W. Canning and Co., Ltd., suppliers of electroplating materials and equipment, Birmingham, has been appointed joint managing director with Mr. Ernest R. Canning, who is the present managing director.

THE DUKE OF WINDSOR visited the chemical works at Radeveul, and also the Leuna Works, during his recent tour of industrial districts in Germany. At the works of Kammgarnspinnerei Stoehr, the Duke showed great interest in "zellwolle," a new wool substitute made from wood.

DR. G. F. NEW, president of the Oil and Colour Chemists' Association, is in the United States on a business tour. He will attend the convention of the Paint, Varnish and Lacquer Association and also the meetings of the Federation of Paint and Varnish Production Clubs. He expects to be back in England in the early part of December.

MR. EDWARD WALTER MACMILLAN HAMILTON, of Sedgford, Norfolk, who is 19 years of age, has received the King's Medal for the best scholar of the year at King's Lynn Grammar School. He was received by the King at Sandringham House, on the occasion of the presentation of the medal, on October 31. Hamilton is now studying chemistry at King's College, London. The King's Medal was first awarded in 1864, having been instituted by King Edward VII when Prince of Wales.

MR. JOHN ROBERT STUBBS, F.I.C., chief assistant county analyst for Lancashire since the war, has now been appointed chief analyst in succession to Dr. C. D. Elsdon, who has resigned to take up his duties as chief inspector of the Mersey and Irwell Joint Committee. Mr. Stubbs entered the service of the Lancashire County Council in 1900. He is a member of the Society of Public Analysts and of the Public Analysts' Committee. For the past nine years he has been hon. secretary of the North of England section of the Society of Public Analysts. In conjunction with Dr. Elsdon, he carried out researches on the freezing of milk to detect the presence of added water.

PROFESSOR ALBERT VON SZENT-GYORGYI, a medical research worker at the University of Szeged, Hungary, has been awarded the 1937 Nobel Prize for physiology and medicine, which is valued at about £8,000. He receives the prize "as a reward for his discoveries on the biological processes of combustion, especially in relation to vitamins A and C," having been chosen for this distinction by the Stockholm Higher Faculty of Medicine. Professor Szent-Gyorgyi discovered the high content of vitamins C and D in a certain sweet red pepper which is in common use in Hungary, and noted the ease with which the vitamin properties of this red pepper could be assimilated.

MR. H. M. ENNALS, a member of the board of Fison, Packard and Prentice, Ltd., has retired after fifty years' service. He joined the staff of Joseph Fison and Co., Ltd., of Ipswich, as a salesman in 1887 and in 1921 was appointed a director of the company.

MR. R. J. TURNER, export manager of C. C. Wakefield and Co., Ltd., lubricating oil manufacturers, and chairman of the Institute of Export, has accepted an invitation from the Norwich Junior Chamber of Commerce to address members on export trade.

DR. A. R. TODD, D.Sc., has been appointed to the University readership in biochemistry, University of London, tenable at the Lister Institute of Preventive Medicine. Since 1936 he has been an assistant in the biochemical department of the Institute.

MR. ARTHUR P. BEVAN, chairman and managing director of Goodlass Wall and Co., Ltd., paint manufacturers, of Liverpool, has won a seat in the election for the Princes Park Ward, Liverpool City Council. MR. JOHN THOMAS HACKETT, manufacturing chemist, Bootle, had an easy win for the local town council. MR. R. F. FFR, paint manufacturer, gained a seat on the Wallasey town council.

OBITUARY

COLONEL EDWARD AUDUS HIRST, late of Ingmanthorpe Hall, Wetherby, has died at Harrogate, at the age of 65. In 1891 he was chairman of Hirst, Brooke and Hirst, manufacturing chemists, Leeds.

MR. JAMES STEWART CALDWELL, a well-known West Lothian mining engineer, has died at Edinburgh, in his 67th year. In 1920 he was appointed manager at Philpstoun oil works, and retained this position until the works closed down in 1931.

Foreign Chemical Notes

France

THE SOCIETE INDUSTRIELLE DU CAMPHRE (13 rue Miollis, Paris) has been formed with a capital of 2½ million francs.

Roumania

A CARBON BLACK FACTORY IS TO BE ESTABLISHED at Bucksani, authorisation having been granted to import equipment from Czechoslovakia to the value of 30 million lei.

Italy

A STUDY OF CELLULOSE-PRODUCING PLANT CULTIVATION in Italy will be undertaken by a new company to be sponsored by the government.

A NEW ELECTRICAL POWER PLANT to be operated with natural steam at Larderello will enable the Soc. Boracifera di Larderello to increase its output of boron compounds, carbonic acid and ammonium compounds.

RESEARCH INTO SYNTHETIC RUBBER PRODUCTION will be prosecuted at the Institute for Study of Synthetic Rubber recently established in Milan, with a capital of 2 million lire by the Pirelli Co., under State encouragement.

Russia

BLANC FIXE IS TO BE MANUFACTURED from the residues of barium chloride production at the Constantinovka Chemical Works.

RENEWED EFFORTS ARE TO BE MADE to develop by-product extraction from fertiliser manufacture. In particular, the production of fluorine compounds in the superphosphate factories will be pushed forward, a special plant for sodium fluoride manufacture having already been installed at the Neon Chemical Combinate in Leningrad, while barium silicofluoride manufacture is planned at the Constantinovka Chemical Works.

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

RECOVERY OF AMMONIA from used cuprammonium artificial silk precipitation liquors.—I. G. Farbenindustrie. (Germany, Oct. 10, '36.) 27581.

MANUFACTURE OF SYNTHETIC SUBSTANCES.—G. W. Johnson (I. G. Farbenindustrie.) 27885.

DYEING OF ORGANIC DERIVATIVES of cellulose, etc.—Kodak, Ltd. (Eastman Kodak Co.). 27265.

MACHINES FOR CUTTING, ETC., PHARMACEUTICAL CAPSULES, ETC.—A. Landrin. (France, Dec. 28, '36.) 27267.

MANUFACTURE OF ETHYL CHLOROFORM.—A. A. Levine. 27429.

APPARATUS FOR CARRYING OUT CATALYTIC REACTIONS ON FLUIDS.—O. D. Lucas, C. Pleydell-Bouverie, and Research Trust, Ltd. 27436.

MANUFACTURE OF PLASTIC COMPOSITIONS.—F. R. Machin. 27159.

TREATMENT OF REGENERATED CELLULOSE.—M. F. Monbiot. 27668.

PREPARATION OF METALLIC PHTHALOCYANINES.—Montecatini Soc. Generale per l'Industria Mineraria ed Agricola. (Italy, July 3.) 27584.

TREATMENT OF TEXTILE MATERIALS.—National Processes, Ltd. 27366.

ORGANIC COMPOUNDS.—H. C. Olpin, and G. H. Ellis. 27486.

MANUFACTURE OF ANTIRACHITIC PRODUCTS.—H. F. Rost. (Sweden, Jan. 22.) 27593.

DEHYDRATION, ETC., OF PEAT.—Z. G. Schönborn. 27551.

TUNNEL-OVENS FOR CERAMIC PRODUCTS.—Soc. des Tours Industriels et Metallurgiques. (France, Oct. 9, '36.) 27347.

SEPARATION BY FLOTATION OF AMMONIUM CHLORIDE from its mixtures with alkaline salts.—Soc. d'Etudes pour la Fabrication et l'Emploi des Anglais Chimiques. (France, Oct. 28, '36.) 27886.

MANUFACTURE OF ARTICLES FROM POLYMERISATION PRODUCTS of high molecular weight.—H. P. Staudinger, and Distillers Co., Ltd. 27597.

MANUFACTURE OF FERROCHROMIUM.—M. J. Udy. 27896.

TREATMENT OF TEXTILE FIBRES.—United States Rubber Products, Inc. (United States, Oct. 15, '36.) 27678.

MANUFACTURE OF ACETYL-CELLULOSE.—Dr. A. Wacker Ges. für Elektrochemische Industrie Ges. (Germany, Oct. 27, '36.) 27714.

ARRANGEMENTS FOR CENTRIFUGAL SEPARATORS.—Aktiebolaget Separator. (Germany, Oct. 17, '36.) 28299.

TEXTILE MATERIALS.—A. S. Bell. 27957.

MANUFACTURE OF HEAT-INSULATING MATERIAL.—E. Berl. 28586.

ABSORPTION OF GASES, ETC.—E. Berl. 28587.

REDUCTION OF EXPLOSION RISKS.—E. Berl. 28588.

MANUFACTURE OF AMMONIUM SALTS of aromatic nitro-hydroxy compounds.—E. Berl. 28589.

MANUFACTURE OF THERAPEUTIC PREPARATIONS.—R. Beutner. 28242.

ORGANIC COMPOUNDS.—E. F. Bradbrook, S. Coffey, N. H. Haddock, and Imperial Chemical Industries, Ltd. 28166.

TREATMENT OF TEXTILE MATERIALS.—British Celanese, Ltd. (United States, Oct. 20, '36.) 28303.

MANUFACTURE OF STIFFENED FABRICS, ETC.—British Celanese, Ltd. (United States, Oct. 21, '36.) 28455.

MANUFACTURE OF SHEET CELLULOSIC MATERIAL.—British Cellophane, Ltd. (United States, Oct. 22, '36.) 28630, 28631.

SIEVES FOR CENTRIFUGAL EXTRACTORS.—Compagnie Continentale pour l'Exploitation de Brevets Industriels. (Belgium, Oct. 23, '36.) 28121.

PRODUCTION OF ANHYDROUS SOAP and glycerine.—F. B. Dehn (Lorenz Patents Corporation). 28134, 28135.

GASIFICATION OF SOLID FUELS.—F. J. Dent. 28120.

FLOCCULATION OF SOLID SUBSTANCES, ETC., in liquid media.—L. J. Derham. 28474.

TREATMENT OF TEXTILE MATERIALS, ETC.—H. Dreyfus, and R. W. Moncrieff. 28100.

MANUFACTURE OF ALIPHATIC COMPOUNDS.—H. Dreyfus. 28456.

COLOURING MATERIALS.—H. Dreyfus. 28457.

STABILISATION OF CHLORINATED HYDROCARBONS.—A. I. S. Duncan, and Imperial Chemical Industries, Ltd. 28504.

MANUFACTURE OF LUBRICATING-OILS.—E. I. Du Pont de Nemours and Co. (United States, Oct. 20, '36.) 28373.

PROCESS OF RENDERING TEXTILES WATER-REPELLENT.—Farbereien Ges. Flores and Co. vorm. Stolte-Missy, W. Essers, and M. Flores. (Germany, Oct. 16, '36.) 28208.

METALLURGICAL WORKING OF LOW-GRADE IRON ORES.—Ges. für Lindes Eismaschinen, A.-G. (Germany, Oct. 14, '36.) 27980.

MANUFACTURE OF PRODUCTS comprising cellulose and polyvinyl acetal.—W. W. Groves (Deutsche Celluloid-Fabrik). 28320.

MANUFACTURE OF ARTIFICIAL FIBRES.—W. W. Groves (I. G. Farbenindustrie.) 28124.

PRODUCTION OF SULPHUR.—C. F. R. Harrison, F. O. Henneryd, Bolidens Gruvaktiebolag, Imperial Chemical Industries, Ltd., A. R. Lindblad, and G. Ogden. 28167.

DAMPING OF TEXTILE FABRICS, ETC.—Hunt and Moscrop, Ltd., and E. F. Hunt. 28269.

PHOTOGRAPHIC ANTI-HALATION LAYERS.—W. W. Groves. 28125.

MANUFACTURE OF A SUBSTITUTE FOR WOOL from viscose.—I. G. Farbenindustrie, and W. W. Groves. 28176.

MANUFACTURE OF CONDENSATION PRODUCTS.—I. G. Farbenindustrie. (Germany, Oct. 28, '36.) 28379.

MANUFACTURE OF WATER-INSOLUBLE COLOUR LAKES.—I. G. Farbenindustrie, and G. W. Johnson. 28466.

MANUFACTURE OF SAFETY-FUSES.—Imperial Chemical Industries, Ltd. (United States, Oct. 16, '36.) 28372.

PURIFICATION OF WASTE AQUEOUS LIQUIDS containing phenol.—G. W. Johnson (I. G. Farbenindustrie.) 28115.

MEANS FOR EXPELLING from solutions substances which are volatile when hot.—G. W. Johnson. 28335.

LOW-TEMPERATURE CARBONISATION, ETC., OF RESIDUES containing oil and asphalt.—G. W. Johnson. 28465.

RECOVERY OF NEUTRAL AQUEOUS SOLUTIONS of dichlorhydrin.—G. W. Johnson. 28467.

MANUFACTURE OF LEAD DIOXIDE.—G. W. Johnson. 28468.

MANUFACTURE OF DYESTUFFS.—G. W. Johnson. 28469, 28470, 28471.

MANUFACTURE OF OLEFINE OXIDES.—G. W. Johnson. 28598.

MANUFACTURE OF LEAD OXIDES.—G. W. Johnson. 28599.

DECORATION OF CERAMIC PRODUCTS, ETC.—Johnson, Matthey and Co., Ltd., L. Allen, E. R. Box, and N. H. White. 28336.

COMPOSITIONS containing sulphur in pulverulent form.—H. L. Leech. 27944.

REMOVAL OF SURFACE-METAL, ETC.—Linde Air Products Co. (United States, Oct. 24, '36.) 28046.

MANUFACTURE OF COMPLEX METALLIC COMPOUNDS.—B. H. Marsh, and D. W. Marsh. 28173.

PRODUCTION OF TEXTILE MATERIALS.—A. Mellor, and R. J Mann. 27956.

MANUFACTURE OF SYNTHETIC RESIN COMPOUNDS.—J. B. Monier. (France, March 8). 28308.

COMBUSTION OF SULPHUR, ETC.—Montecatini Soc. Generale per l'Industria Mineraria ed Agricola. (Italy, Oct. 19, '36.) 28119.

ANODIC OXIDATION OF ARTICLES made of aluminium or its alloys. E. Potter (Montecatini Soc. Generale per l'Industria Mineraria ed Agricola). 28492.

LEAD ALLOYS for metal bearings.—M. F. von Schwarz. 28106.

IRON ALLOYS FOR PERMANENT MAGNETS.—Siemens and Halske, A.-G. 28162, 28163.

MANUFACTURE OF PERSALTS.—V. W. Slater. 28123.

MANUFACTURE OF DERIVATIVES of organic sulpho-dicarboxylic acids.—Soc. of Chemical Industry in Basle. (Switzerland, Oct. 17, '36.) 28321.

MANUFACTURE OF DERIVATIVES OF ORGANIC SULPHO-DICARBOXYLIC ACIDS.—Soc. of Chemical Industry in Basle. (Switzerland, Oct. 12.) 28322.

HOMOGENISING-APPARATUS for emulsifying liquids.—G. R. Thomson. 28272.

LEAD ALLOYS.—W. W. Trigs (Soc. Generale Metallurgique de Hoboken). 28171.

PROCESSES OF HYDROGENATION.—Trinidad Leaseholds, Ltd. (Newton). 28429.

HARD METAL ALLOYS.—Vereinigte Edelstahl, A.-G. (Germany, Oct. 17, '36.) 28365.

PRODUCTION OF GREEN PATINA on copper, etc.—W. H. J. Vernon. 28541.

DISTILLATION OF CARBONACEOUS MATERIALS.—A. E. Waters. 28369.

MANUFACTURE OF RUBBER HYDROHALIDES.—Wingfoot Corporation. (United States, Jan. 26.) 27946.

MANUFACTURE OF RUBBER HYDROHALIDES.—Wingfoot Corporation. (United States, Jan. 28.) 27947.

TREATMENT OF ZINC OXIDE.—Amalgamated Oxides, Ltd., and A. G. Elliott. 29198.

PLASTIC COMPOSITIONS.—Bakelite, Ltd. (United States, April 23.) 28991.

Specifications Open to Public Inspection

MANUFACTURE OF ORGANIC MERCURY COMPOUNDS.—Fahlberg-List, A.-G. Chemische Fabriken. April 24, 1936. 6331/37.

DRYING OIL COMPOSITIONS.—Bakelite, Ltd. April 25, 1936. 6408/37.

MANUFACTURE OF SODIUM HYDROSULPHIDE.—I. G. Farbenindustrie. April 23, 1936. 7046/37.

PROCESS FOR PRODUCING FATTY ACIDS of vegetable or animal fats or oils from their glycerides.—Albert Products, Ltd. April 22, 1936. 6807/37.

MANUFACTURE OF CELLULOSE SOLUTIONS.—Soc. of Chemical Industry in Basle. April 21, 1936. 9724/37.

RUBBER HYDROHALIDES and processes of preparing same.—Reynolds Research Corporation. April 24, 1936. 10124/37.

MANUFACTURE OF MORDANT AZO-DYESTUFFS.—Durand and Huguenin, A.-G. April 20, 1936. 11265/37.

MANUFACTURE AND PRODUCTION OF WATER-GAS.—I. G. Farbenindustrie. April 21, 1936. 11284/37.

FLUORESCENT MATERIALS and methods of manufacturing same.—British Thomson-Houston Co., Ltd. April 22, 1936. 11286-7-8/37.

METHOD OF AND MEANS FOR THE PRODUCTION OF COARSELY CRYSTALLINE AMMONIUM SULPHATE or the like.—Koppers Industrieele Maatschappij N.V., H. April 20, 1936. 11326/37.

MANUFACTURE OF ADIPONITRILE.—E. I. du Pont de Nemours and Co. April 21, 1936. (Cognate Application, 11449/37.) 11448/37.

PROCESS FOR THE TREATMENT OF GASES from furnaces for the production of aluminium.—Det Norske Aktieselskab for Elektrokemisk Industri. April 25, 1936. 11574/37.

Specifications Accepted with Date of Application

PROCESS FOR RECOVERING ALKYLOLAMINES from alkylolamine soaps or substances containing these.—Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. Feb. 26, 1936. 473,225.

CLARIFICATION OF INDUSTRIAL LIQUORS.—British Titan Products Co., Ltd. March 21, 1936. 473,054.

PROCESS FOR OBTAINING SULPHUR FROM GASES containing hydrogen sulphide.—Zahn and Co., Ges., and K. Dreyer. April 17, 1937. 473,248.

LUBRICATING-EMULSIONS.—R. C. Williams and Ironsides Co. Jan. 31, 1936. 473,056.

PREPARATIONS FOR PROTECTION FROM INSECTS.—A. Carpmael (I. G. Farbenindustrie.) Jan. 7, 1936. 473,592.

HARDENING OF CELLULOSE and kindred matters and products resulting therefrom.—C. Luckhaupet. April 23, 1936. 11746/37.

METHOD OF PRODUCING CERAMIC ARTICLES which resist spalling. Magnesital Ges. March 19, 1935. 473,834.

PROCESS FOR THE MANUFACTURE OF ACID WOOL DYESTUFFS of the anthraquinone series.—I. G. Farbenindustrie. March 15, 1935. 473,884.

PRODUCTION OF PROTECTIVE GASES suitable for use in metal heat-treatment furnaces.—J. L. Pearson, and Imperial Chemical Industries, Ltd. March 18, 1936. (Divided out of 8172/36.) 473,696.

PRODUCTION OF NON-OXIDISING GASEOUS MIXTURES.—J. L. Pearson, and Imperial Chemical Industries, Ltd. March 18, 1936. 473,697.

DISTILLATION AND COKING OF MIXTURES of solid carbonaceous materials with hydrocarbon oils.—J. Swallow. March 20, 1936. 473,886.

PROCESS OF TREATING FIBROUS MATERIALS including leather.—Naamlooze Vennootschap Chemische Fabriek Servo, and M. D. Rosenbroek. April 15, 1936. 473,760.

MANUFACTURE OF PHENOL-ALDEHYDE CONDENSATION PRODUCTS.—W. W. Groves (I. G. Farbenindustrie.) April 17, 1936. (Sample furnished.) 473,888.

MANUFACTURE OF HIGHLY-CONCENTRATED SULPHURIC ACID.—W. Schefczik. April 20, 1935. 473,892.

MANUFACTURE OF ACRIDINIUM COMPOUNDS.—I. G. Farbenindustrie. April 20, 1935. 473,843.

MANUFACTURE AND PRODUCTION OF DERIVATIVES of 1.4-diaminoanthraquinone.—G. W. Johnson (I. G. Farbenindustrie.) April 17, 1936. 473,762.

MANUFACTURE AND PRODUCTION OF ARTIFICIAL RESINS.—G. W. Johnson (I. G. Farbenindustrie.) April 21, 1936. (Cognate Application, 20316/36.) 474,034.

COPPER ALLOYS OR BRONZES.—J. Stone and Co., Ltd., A. J. Murphy, and G. T. Callis. April 22, 1936. 473,970.

CLEANING AND PICKLING OF METALS.—Grasselli Chemical Co. April 24, 1935. 473,991.

DEVICES OR INSTRUMENTS FOR ANALYSING GASES or for measuring a constituent of a gas.—Electroflo Meters Co., Ltd. (Republic Flow Meters, Inc.). April 22, 1936. 473,969.

MANUFACTURE OF CELLULOSE DERIVATIVES.—British Celanese, Ltd., H. F. Oxley, E. B. Thomas and J. Downing. April 22, 1936. 473,975.

MANUFACTURE OF BROMONAPHTHOIC ACID.—D. A. W. Fairweather, and Imperial Chemical Industries, Ltd. April 25, 1936. 473,992.

PREPARATION OF N-SUBSTITUTED CAMPHORIC AMIDES.—G. B. Ellis (Soc. des Usines Chimiques Rhone-Poulenc). April 27, 1936. 473,995.

MANUFACTURE OF LEAD ALLOYS.—Goodlass Wall and Lead Industries, Ltd., B. Jones and C. Wilson. June 4, 1936. 473,781, and 475,911.

METHOD AND APPARATUS FOR OBTAINING CELLULOSE from cellulose-containing materials.—F. Offermanns. June 11, 1936. 473,708.

MATERIALS FOR ABSORBING CARBON DIOXIDE.—Soc. D'Electro-Chimie, D'Electro-Metallurgie, et des Acieres Electriques D'Ugine, and A. Cochet. June 13, 1936. 473,913.

MANUFACTURE AND PRODUCTION OF COMPOUNDS of the anthraquinone series containing nitrogen and sulphur.—G. W. Johnson (I. G. Farbenindustrie.) June 16, 1936. 473,914.

METHOD OF PREPARING PHOSPHORESCENT MATERIAL.—Naamlooze Vennootschap Philips' Gloeilampenfabrieken. July 30, 1935. 473,715.

PROCESS OF PREPARATION OF SOLUTIONS of cellulose acetate and pellicles, threads, sheets, coatings, and plastic masses resulting therefrom.—Compagnie Nationale de Matieres Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann. Nov. 9, 1935. (Cognate Application, 28471/36.) 473,928.

MANUFACTURE AND PRODUCTION OF VALUABLE HYDROCARBONS and their derivatives containing oxygen from carbon monoxide and hydrogen.—I. G. Farbenindustrie. Nov. 30, 1935. 473,932.

PREPARATION OF SECONDARY AROMATIC AND HETEROCYCLIC AMINES.—Calco Chemical Co., Inc. Dec. 6, 1935. 473,739.

PROCESS AND APPARATUS FOR PRODUCING WATER-GAS free from tar and hydrocarbons from bituminous fuels.—Vergasungs-Industrie, A.-G. Nov. 2, 1936. 473,948.

Chemical and Allied Stocks and Shares

SINCE the beginning of the new Stock Exchange account on Monday, there has been no material change in the general trend of the stock and share markets. The volume of business remained small and, with the exception of the usually active securities, was probably not sufficient to affect prices. Sentiment continues to be dominated almost entirely by international affairs and it is generally felt that the tendency of markets is unlikely to be reversed until the international outlook is less uncertain.

Imperial Chemical fluctuated moderately, and are 36s. 7½d. at the time of writing, compared with 36s. 4½d. a week ago. Distillers have improved further from 107s. to 108s. 6d., United Molasses were active and have been maintained at 27s. awaiting the past year's results, which are expected to be issued this month. Associated Portland Cement improved 1s. 3d. to 90s., it being pointed out that on the basis of last year's 22½ per cent. dividend an attractive yield is offered by the shares. British Plaster Board fluctuated moderately in advance of the interim dividend declaration, but on balance for the week have gained 7½d. to 32s.

Borax Consolidated were again a steady feature and have remained at 29s. In respect of the previous year the dividend was 7½ per cent., and the market remains hopeful; there may be a further increase shown by the next results. British Oxygen fluctuated, but received a fair amount of attention on the interim statement. Imperial Smelting have been lowered to 14s., but are now "ex" the dividend. Fison, Packard and Prentice at 36s. 3d. have not held best prices, but were fairly steady on the statements at the meeting. The 9 per cent. dividend for the past year is on the conservative side, as earnings on the ordinary capital now in issue would work out at fully 13 per cent. In the current year, fuller benefits will no doubt accrue from the expansion of the business.

Boots Pure Drug at 49s. 6d. are within a few pence of the price ruling a week ago, while Sangers have improved moderately to 23s. 6d. Timothy Whites and Taylors remained at 31s. Beechams Pills deferred shares were lower at 60s., although the general belief in the market is that the upward movement in the company's profits is probably continuing. It is expected a further interim payment will be announced next month.

Turner and Newall fluctuated moderately and are 88s. at the time of writing. The market expects the forthcoming results of the latter company to show higher profits but is doubtful if an increase will be made in the dividend. Wall Paper deferred shares have improved and are 40s. at the time of writing, the preliminary figures having created a favourable impression. Pinchin Johnson were steady at 41s. 3d. and other shares of paint manufacturing and allied companies were little changed as compared with a week ago.

International Nickel, in common with most dollar shares, moved in accordance with the day-to-day fluctuations of Wall Street, but the dividend announcement was well received, and was in fact, up to best market expectations. British Match were unchanged at 35s., aided by the interim dividend. Unilever were steadier, awaiting the interim dividend announcement which falls to be made this month. It is not expected that effect will be given to the merger with Lever Brothers before the end of the year.

Dorman Long were lower in common with most other leading iron and steel shares, despite the favourable market anticipations attaching to the impending dividend announcement. Richard Thomas were steadier on the hope that the interim dividend will be maintained on the larger capital.

Cotton textile shares were little changed, but Calico Printers and Bradford Dyers issues were reported to have a steadier appearance. British Celanese were lowered on the decline in profits shown by the report, and most other rayon shares were a few pence below the prices ruling a week ago.

Oil shares continued to fluctuate with the trend of most securities with an international market. It is expected the "Shell" interim dividend will be declared this month.

Weekly Prices of British Chemical Products

THERE are no outstanding price alterations for general chemicals, wood distillation products or rubber chemicals, and trade in each of these sections has followed a very even trend. The demand is perhaps a little more widespread than of late, but on the whole the movement of chemicals into consumption is not more than the average for the period. Values generally are steady with a firm undertone with the immediate outlook satisfactory. A little more activity has been displayed in the coal tar products, but spot transactions are difficult to negotiate. The outstanding feature of the market is the strong demand for pyridine, quotations for which have been raised by about 6d. per gallon. Available supplies are reported to be insufficient to meet immediate requirements. Carbolic acid crystals are enjoying a good export trade, present shipments, however, are almost wholly in fulfilment of existing contracts. Quotations remain unaffected, but firmer values are anticipated. Elsewhere in this market a lot of interest is displayed, although the actual business being done is on a very small scale.

MANCHESTER.—The bulk of the new business in heavy chemical products on the Manchester market during the past week has been in respect of spot or near delivery parcels. Sellers are looking for an early flow of contract inquiries as the 1938 prices become available, and it is fully anticipated that forward bookings will be on a satisfactory scale. The outlook as regards prices is for continued firm levels generally and there is a disposition to look upon the recent advance in alkali as a pointer. Good quantities of textile and other descriptions of chemicals are going into consumption against old commitments in Lancashire and West Yorkshire and inquiries reveal little indication of any contraction in operating rates at the consuming end. Export inquiry locally has been on moderate lines.

GLASGOW.—Business in chemicals has continued quite steady during the week for home trade, though export business remains limited. Prices generally are very firm, on basis of last week's figures, with few actual changes, though several articles are inclined to be dearer, especially for forward delivery.

General Chemicals

ACETONE.—£45 to £47 per ton.

ACETIC ACID.—Tech., 80%, £28 5s. per ton; pure 80%, £30 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech. glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 per ton d/d Lancs.; GLASGOW: £7 to £8 ex store.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders. SCOTLAND: 10½d. to 1s. 0½d., containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb., d/d.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE.—Grey galvanising, £17 10s. per ton, ex wharf.

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)

AMMONIUM DICHROMATE.—8d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £11 per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. MANCHESTER: White powdered Cornish, £17 per ton, ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £11 10s. per ton.

BLEACHING POWDER.—Spot, 35/37%, £8 15s. per ton in casks, special terms for contracts. SCOTLAND: £9 per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16, crystal, £17; powdered, £17 10s. per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHROMETAN.—Crystals, 2⅝d. per lb.; liquor, £19 10s. per ton d/d. station in drums. GLASGOW: 70/75% solid, £5 15s. per ton net ex store.

CHROMIC ACID.—9¾d. per lb., less 2½%; d/d U.K.

CITRIC ACID.—1s. 0¾d. per lb. MANCHESTER: 1s. SCOTLAND: B.P. crystals, 1s. 0½d. per lb., less 5%, ex store.

COPPER SULPHATE.—£21 7s. 6d. per ton, less 2% in casks. MANCHESTER: £20 per ton f.o.b. SCOTLAND: £22 per ton, less 5%, Liverpool, in casks.

CREAM OF TARTAR.—100%, 92s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£22 10s. per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled, 1.260 s.g., in tins, £5 7s. 6d. to £6 7s. 6d. per cwt. according to quantity; in drums, £5 to £5 13s. 6d.

HYDROCHLORIC ACID.—Spot, 5s. to 7s. 6d. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 6s. 4d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots) Dark, 50% by volume, £23 10s.; by weight, £27 10s.; Pale, 50% by volume, £27; by weight, £32 per ton. LANCASHIRE: Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One-ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. GLASGOW: White crystals, £33 10s.; brown, £1 per ton less. MANCHESTER: White, £35 10s.; brown, £35.

LEAD NITRATE.—£34 per ton for 1-ton lots.

LEAD, RED.—£33 15s. per ton, less 2½% carriage paid. SCOTLAND: £33 per ton, less 2½%, carriage paid for 2-ton lots.

LITHARGE.—SCOTLAND: Ground, £33 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—SCOTLAND: Ground calcined, £9 per ton, ex store.

MAGNESIUM CHLORIDE.—SCOTLAND: £7 10s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY.—Ammoniated B.P. (white precip.), lump, 5s. 11d per lb.; powder B.P., 6s. 1d.; bichloride B.P. (corros. sub.) 5s. 2d.; powder B.P. 4s. 10d.; chloride B.P. (calomel), 5s. 11d.; red oxide cryst. (red precip.), 7s.; levig. 6s. 6d.; yellow oxide B.P. 6s. 4d.; persulphate white B.P.C., 6s. 1d.; sulphide black (hyd. sulph. cum sulph. 50%), 6s. For quantities under 112 lb., 1d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NITRIC ACID.—80° Tw. spot, £16 10s. per ton makers' works.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. GLASGOW: £2 9s. per cwt. in casks. MANCHESTER: £49 to £55 per ton ex store.

PARAFFIN WAX.—SCOTLAND: 3¾d. per lb.

POTASH CAUSTIC.—Solid, £35 5s. to £36 15s. per ton for 2-ton lots ex store; broken, £42 per ton. MANCHESTER: £39.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. GLASGOW: 4¼d. per lb. MANCHESTER: £38 per ton.

POTASSIUM DICHROMATE.—SCOTLAND: 5d. per lb., net, carriage paid.

POTASSIUM IODIDE.—B.P. 5s. 6d per lb. in 7 lb. lots.

POTASSIUM NITRATE.—Small granular crystals, £24 to £27 per ton ex store, according to quantity. GLASGOW: Refined granulated, £29 per ton c.i.f. U.K. ports. Spot, £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 9¾d. per lb. SCOTLAND: B.P. Crystals, 9¾d. MANCHESTER: B.P. 10¾d. to 1s.

POTASSIUM PRUSSIATE.—6½d. per lb. SCOTLAND: 7d. net, in casks, ex store. MANCHESTER: Yellow, 6½d.

SALAMMONIAC.—Dog-tooth crystals, £36 per ton, fine white crystals, £16 10s. per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

SALT CAKE.—Unground, spot, £3 to £3 10s. per ton.

SODA ASH.—58% spot, £5 17s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid, 76/77° spot, £12 10s. per ton d/d station. SCOTLAND: Powdered 98/99%, £18 10s. in drums, £19 5s. in casks, Solid 76/77° £15 12s. 6d. in drums; 70/73%, £15 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts, 10s. per ton less.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£18 per ton carriage paid North. GLASGOW: £17 15s. per ton net ex store.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags. MANCHESTER: £10 10s.

SODIUM BISULPHITE POWDER.—60/62%, £20 per ton d/d 1 cwt. iron drums for home trade.

SODIUM CARBONATE MONOHYDRATE.—£15 5s. per ton d/d in minimum ton lots in 2 cwt. free bags.

SODIUM CHLORATE.—£26 10s. to £30 per ton. GLASGOW: £1 10s. per cwt., minimum 3 cwt. lots.

SODIUM CHROMATE.—4d. per lb. d/d U.K.

SODIUM DICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount 5%. MANCHESTER: 4d. per lb. GLASGOW: 4d., net, carriage paid.

SODIUM HYPOSULPHITE.—Pea crystals, £14 10s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.

SODIUM METASILICATE.—£14 per ton, d/d U.K. in cwt. bags.
SODIUM NITRATE.—Refined, £8 per ton for 6-ton lots d/d.
SODIUM NITRITE.—£18 5s. per ton for ton lots.
SODIUM PERBORATE.—10%, 9¼d. per lb. d/d in 1-cwt. drums.
SODIUM PHOSPHATE.- £10 10s. to £11 per ton delivered (Di-basic).
SODIUM PRUSSIATE.—d. per lb. for ton lots. GLASGOW: 5d. to 5¾d. ex store. MANCHESTER: 4d. to 4¾d.
SODIUM SILICATE.—£9 10s. per ton.
SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 12s. 6d.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 5s. per ton d/d in drums; crystals 30/32%, £8 15s. per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
SODIUM SULPHITE.—Pea crystals, spot, £13 10s. per ton d/d sta- of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb.
SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.—1s. 1¼d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1d. per lb.
ZINC SULPHATE.—Tech., £12 10s. f.o.r., in 2 cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7d. to 1s. 2d. per lb., according to quality. Crimson, 1s. 6d. to 1s. 7½d. per lb., according to quality
ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £6 10s. per ton, according to quality.
CADMIUM SULPHIDE.—7s. 8d. to 7s. 11d. per lb.
CARBON BLACK.—4¾d. per lb., ex store.
CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 2d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4¾d. to 5¼d. per lb.; dark 4d. to 4¼d. per lb.
LAMP BLACK.—£28 to £30 per ton del., according to quantity. Vegetable black, £35 per ton upwards.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE.—30%, £16 10s. to £17 5s. per ton.
SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.
SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.
VERMILLION.—Pale, or deep, 5s. 3d. per lb., 1-cwt. lots.
ZINC SULPHIDE.—£38 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6 = nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1938: November, £7 8s.; December, £7 9s. 6d.; January, 1938, £7 11s.; February, £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1938: November, £7 10s.; December, £7 11s. 3d.; January, 1938, £7 12s. 6d.; February, £7 13s. 9d.; March, £7 15s.; April/June, £7 16s. 3d.
NITRO CHALK.—£7 10s. 6d. per ton for delivery up to June 30, 1938.
SODIUM NITRATE.—£8 per ton for delivery up to June 30, 1938.
CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9½d. to 10d. per gal.; standard motor, 1s. 3d. to 1s. 3½d.; 90%, 1s. 4d. to 1s. 4½d.; pure, 1s. 8d. to 1s. 8½d. GLASGOW: Crude, 10d. to 10½d. per gal.; motor, 1s. 4d. to 1s. 4½d.
CARBOLIC ACID.—Crystals, 7½d. to 8½d. per lb., small quantities would be dearer; Crude, 60's, 4s. to 4s. 3d., dehydrated, 4s. 6d. to 4s. 9d. per gal. MANCHESTER: Crystals, 9¾d. to 10d. per lb. f.o.b. in drums; crude, 4s. 3d. per gal. GLASGOW: Crude, 60's, 4s. 3d. to 4s. 6d. per gal.; distilled, 60's.
CREOSOTE.—Home trade, 6¼d. to 6¾d. per gal., f.o.r. makers' works; exports, 6¾d. to 6⅞d. per gal., according to grade. MANCHESTER: 5½d. to 6¼d. GLASGOW: B.S.I. Specification, 6d. to 6¼d. per gal.; washed oil, 5d. to 5½d.; lower sp. gr. oils, 5¾d. to 6¼d.
CRESYLIC ACID.—97/99%, 4s. 6d. to 4s. 9d.; 99/100%, 5s. to 5s. 6d. per gal., according to specification; Pale, 99/100%, 4s. 9d. to 5s. per gal.; Dark, 95%, 4s. to 4s. 3d. per gal. GLASGOW: Pale, 99/100%, 5s. to 5s. 6d. per gal.; pale 97/99%, 4s. 6d. to 4s. 10d., dark, 97/99%, 4s. 3d. to 4s. 6d.; high boiling acids, 2s. to 2s. 6d. American specification, 4s. 3d. to 4s. 6d. MANCHESTER: Pale, 99/100%, 4s. 8d.
NAPHTHA.—Solvent, 90/160, 1s. 6½d. to 1s. 7½d. per gal.; solvent, 95/160%, 1s. 8d. to 1s. 9d., naked at works; heavy 90/190%, 1s. 1½d. to 1s. 3d. per gal., naked at works, according to quantity. GLASGOW: Crude, 6½d. to 7½d. per gal.; 90%, 160, 1s. 5d. to 1s. 6d., 90%, 190, 1s. 1d. to 1s. 3d.
NAPHTHALENE.—Crude, whizzed or hot pressed, £8 10s. to £9 10s. per ton; purified crystals, £18 per ton in 2-cwt. bags. LONDON: Fire lighter quality, £5 10s. to £7 per ton. GLASGOW: Fire lighter, crude, £6 to £7 per ton (bags free). MANCHESTER: Refined, £19 per ton f.o.b.
PITCH.—Medium, soft, 38s. per ton, f.o.b. MANCHESTER: 36s. 6d. f.o.b., East Coast. GLASGOW: f.o.b. Glasgow, 35s. to 37s. per ton; in bulk for home trade, 35s.
PYRIDINE.—99/140%, 12s. 6d. to 14s. per gal.; 90/160%, 11s. 3d. to 12s. per gal.; 90/180%, 3s. 6d. to 4s. per gal., f.o.b. GLASGOW: 90% 140, 10s. to 12s. per gal.; 90% 160, 9s. to 10s.; 90% 180, 2s. 6d. to 3s. MANCHESTER: 12s. 6d. to 13s. 6d. per gal.
TOLUOL.—90%, 1s. 11d. per gal.; pure, 2s. 5d. GLASGOW: 90%, 120, 1s. 10d. to 2s. per gal.
XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. GLASGOW: Commercial, 2s. to 2s. 1d. per gal.

Wood Distillation Products

CALCIUM ACETATE.—BROWN, £8 to £8 10s. per ton; grey, £10 10s. to £11 10s. Liquor, brown, 30° Tw., 6d. to 8d. per gal. MANCHESTER: Brown, £9 10s.; grey, £11 10s.
METHYL ACETONE.—40-50%, £42 to £45 per ton.
WOOD CREOSOTE.—Unrefined 6d. to 9d. per gal., according to boiling range.
WOOD, NAPHTHA, MISCIBLE.—2s. 8d. to 3s. 3d. per gal.; solvent, 3s. 6d. to 3s. 9d. per gal.
WOOD TAR.—£3 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZIDINE, HCl.—2s. 5d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 9½d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d to 7½d. per lb. in 1-ton lots.
p-CRESOL, 34-5° C.—1s. 7d. to 1s. 8d. per lb. in ton lots.
DICHLORANILINE.—1s. 11½d. to 2s. 3d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£72 per ton.
DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 10d.
DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works
GAMMA ACID.—Spot, 4s. per lb. 100% d/d buyer's works.
H ACID.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.
NAPHTHIONIC ACID.—1s. 8d. per lb.
α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.
β-NAPHTHOL.—9½d. to 9¾d. per lb.; flake, 9½d. to 9¾d.
α-NAPHTHYLAMINE.—Lumps, 1s. per lb.; ground, 1s. 0½d. in casks.
β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb., d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. per lb. 100%.
o-NITRANILINE.—3s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 7d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. to 2s. 1d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra. 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9½d. to 10d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb., 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10-cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Latest Oil Prices

LONDON, Nov. 3.—LINSEED OIL was slow. Spot, £30 10s. per ton (small quantities). Nov. and Dec., £27 17s. 6d.; Jan. to Dec. (1938), £27 15s., naked. SOYA BEAN OIL was steady. Oriental, spot, ex tank, Rotterdam, £21 17s. 6d. per ton. RAPE OIL was easier. Crude, extracted, £36 10s. per ton; technical, refined, £37 10s., naked, ex wharf. COTTON OIL was quiet. Egyptian, crude, £21 10s. per ton; refined common edible, £26; deodorised, £28, naked, ex mill (small lots, £1 10s. extra). TURPENTINE was firmer. American, spot, 32s. per cwt.; Nov.-Dec. delivery, 32s. 3d.; Jan.-April, 33s. 3d.
HULL.—LINSEED OIL.—Spot, quoted £29 5s. per ton; Nov.-Dec., £28 10s.; Jan.-April and May-Aug., £27 17s. 6d. COTTON OIL, Egyptian, crude, spot, £21 10s.; edible, refined, spot, £24 10s.; technical, spot, £24 10s.; dedodorised, £26 10s., naked. PALM KERNEL OIL, crude, f.m.q., spot, £22 10s., naked. GROUNDNUT OIL, extracted, spot, £30; deodorised, £33. RAPE OIL, extracted, spot, £35 10s.; refined £36 10s. SOYA OIL, extracted, spot, £28 10s.; deodorised, £31 10s. per ton. COD OIL, f.o.r. or f.a.s., 27s. 6d. per cwt. in barrels. CASTOR OIL, pharmaceutical, 45s. 6d.; first, 40s. 6d.; second, 38s. 6d. TURPENTINE, American, spot, 34s. 6d. per cwt.

From Week to Week

THE NATIONAL FARMERS' UNION has decided to abandon the Sugar-Beet Marketing Scheme. The scheme has been under consideration since February, 1934.

TWO OUTBREAKS OF FIRE OCCURRED at the glassworks of Redfearn Brothers, Ltd., Harborough Hills Road, Barnsley, on October 30. The Barnsley Fire Brigade spent eight hours at the works.

THE FIRST WELDED WATERLESS GASHOLDER to be erected in England, is being constructed by Horseley Bridge and Thomas Piggott, Ltd., at the works of the Ford Motor Co., Dagenham, Essex.

THE "GLASS AGE" EXHIBITION TRAIN has commenced a tour of England. The train, which is the first travelling display of British glass, was inspected by the Mayor of Doncaster, on October 28, prior to the start of the tour.

TWELVE ADDITIONAL OIL PROSPECTING LICENCES covering a total area of 1,848 square miles in six counties have been issued by the Secretary for Mines. Searches will be carried out in Durham, Yorkshire, Nottinghamshire, Leicestershire, Lincolnshire and Derbyshire.

IMPERIAL CHEMICAL INDUSTRIES, LTD., are to build a chemical plant factory for the Government at Mossend (Lanarkshire). Colvilles, Ltd., the steel makers, have completed negotiations with the War Office for the sale of a portion of the site, amounting to about 25 acres, formerly occupied by the Mossend Steel Works.

JOHN BOWES AND PARTNERS, LTD., are to close down their Marley Hill Chemical Works in March, 1938. About 250 men will lose their employment. The plant was built about 30 years ago. The firm has started a similar plant at Monkton, Hebburn. Mr. W. Diamond, manager of the Marley Hill plant has been transferred to the new works.

OBJECTIONS TO THE ESTABLISHMENT OF A PETROL DEPOT at Lerwick, Shetland Islands, and the granting of a licence to Anglo-American and Shell-Mex, Ltd., led to the Secretary of State for Scotland ordering an inquiry. As the result of the inquiry on October 21, Dr. H. E. Watts, Home Office Inspector of Explosives, is to inspect the site and submit his report.

THE LATEST PUBLICATION OF THE IMPERIAL INSTITUTE treats principally of the world resources of asbestos with special emphasis on the Empire deposits, but it also contains a large amount of information of a more general character and deals fully with dressing and grading, uses, manufactured products, marketing and the statistics of asbestos production and trade.

THE BRITISH ASSOCIATION OF CHEMISTS will hold their 20th annual general meeting at the Queen's Hotel, Birmingham, on November 27, at 3 p.m., when it is hoped members will make a special effort to attend. The annual dinner of the Association will be held at the Queen's Hotel, Birmingham, in the evening. Tickets, 12s. 6d. (exclusive of wine), may be obtained from the General Secretary, British Association of Chemists, "Empire House," 175 Piccadilly, London, W.1. Special reduced terms have been arranged with the Queen's Hotel for members who desire to stay overnight.

THE GENERAL MANAGER OF THE GLASGOW CORPORATION GAS DEPARTMENT is being sued in Paisley Sheriff Court for £10,000. Reference to the action is made in a minute of the Gas Committee which is to come before a meeting of the Corporation. The minute states that an action for £10,000 had been raised by Mr. Robert Maclaurin against the general manager of the Gas Department for damages in respect of alleged false and misleading statements contained in reports made by the general manager to the committee in connection with the Maclaurin smokeless fuel plant. The Gas Committe have agreed that the action be defended at the expense of the Corporation.

THE YORKSHIRE AGRICULTURAL SOCIETY convened a conference at York on September 29, to consider how disused lime kilns in the county could again be brought into operation to increase the supply of lime for agricultural purposes under the provisions of the Land Fertility Scheme which is embodied in the Agricultural Land Act, 1937. Lieut.-Col. J. A. Dunnington-Jefferson presided in the absence of Lord Middleton, who was unable to be present. It was stated that there was going to be a large demand for lime under the new Government scheme, and it seemed probable that there would be difficulty in meeting that demand. In consequence of this the Government should be urged to take early steps for the reopening of the disused lime kilns in Yorkshire as far as that was economically possible. The meeting was attended by representatives from the county branches of the National Farmers' Union, the National Association of Corn and Agricultural Merchants, the beet sugar factory at Poppleton, and commercial lime burners. Captain E. B. Trollope, of the Poppleton beet sugar factory said that a soil survey scheme had been instituted in connection with the lime question, and that 90 per cent. of the soil samples received from farmers revealed a notable shortage of lime.

EMPLOYEES OF THE LOTHIAN CHEMICAL CO., Edinburgh, threatened strike action on November 2 to enforce their demand for higher wages.

THE MANY APPLICATIONS OF THE LOVIBOND COMPARATOR, are described in a new catalogue of The Tintometer, Ltd. It is noted that phenomenal progress seems to have been made in the co-operation of science and industry since this instrument first appeared on the market.

SOLVENTS, DILUENTS AND PLASTICISERS, to the number of over 120 varieties are scheduled, with their physical properties and uses, in a new booklet issued by Brown and Forth, Ltd. In addition, they are able to supply nearly 50 other materials for the special use of the lacquer manufacturer.

SWEDISH PRODUCERS OF MECHANICAL WOOD PULP have come to an arrangement with Norwegian and Finnish producers whereby the existing agreement regulating sales and markets shall be extended for three years. The scheme embraces the majority of producers in the three countries.

IN CONNECTION WITH THEIR CENTENARY, 1837-1937, W. Watson and Sons, Ltd., makers of optical instruments, has issued a brochure of reminiscences. It was in the year 1837 that the firm of W. Watson was founded by William Watson at 71 City Road, London, E.C. Their present business premises in High Holborn, were taken by him in 1861, and were rebuilt in 1872.

THE OCTOBER PRICE LIST issued by May and Baker, Ltd., contains a list of perfumery synthetic chemicals, isolates and special bases. Terpinolene has a full pine odour and suggests at once that this material be used in pine soaps. With an odour more penetrating and of greater durability than that of pine oil, terpinolene is claimed to be very economical to use.

THE APPEAL BY BRITISH CELANESE, LTD., against the judgment of Mr. Justice Porter in the action brought by that company against Courtaulds, Ltd., and Dr. W. H. Glover, has been dismissed by the Court of Appeal with costs against British Celanese upon an application made by the latter company on its own initiative.

THE DEXRAE INDUSTRIAL X-RAY UNIT described in a new booklet of Adam Hilger, Ltd., is a mobile, shock-free X-ray unit complete with demountable, multi-target, hot cathode X-ray tube, transformer, pumps and camera equipment for the study of the metallurgical conditions of metals and alloys, and for the examination of refractories, slags, and other materials.

THE EDINBURGH AND EAST OF SCOTLAND SECTIONS of the Society of Chemical Industry and the Institute of Chemistry opened their sessions in Edinburgh with a joint meeting in the rooms of the Pharmaceutical Society, York Place, with a display of non-advertising films. One of the films showed how modern methods and strict cleanliness ensured a supply of pure milk.

IMPORTS OF CHEMICAL MANUFACTURES and products to the Irish Free State during the nine months January-September of this year were valued at £412,715, an increase of over £30,000 on the corresponding period of 1936. Acids were valued at £19,863; calcium carbide, £7,270; copper sulphate, £66,478; disinfectants, £24,569; potassium compounds, £9,548; caustic soda, £9,954; other sodium compounds, £79,093; and cream of tartar, £8,728.

ONE OF TWO NEW BLAST FURNACES at the reconstructed plant at Ebbw Vale now owned by Richard Thomas and Co., Ltd., was started up on October 29. Both furnaces, the second of which will come into commission next year, are provided with electrical equipment enabling the assembly of the raw material necessary and the actual charging of the furnaces to be carried out almost automatically, cutting out entirely the heavy manual labour formerly associated with blast-furnace work.

A BOOKLET on preventing welding and cutting fires has been published by the Linde Air Products Co. This booklet is an important part of the nation-wide programme to promote safe practices among United States users of industrial equipment. It includes safe and sure rules to follow for preventing the possibility of welding or cutting fires, as well as other pertinent information. Copies may be obtained free upon request from The Linde Air Products Co., General Publicity Department, 205 East 52nd Street, New York, N.Y.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

British West Indies.—A firm manufacturing and dealing in foodstuffs wish to obtain the representation, on a commission basis, for the island of Jamaica, of United Kingdom manufacturers of drugs, paints, oils and greases. (Ref. No. 296.)

Forthcoming Events

London.

November 8.—Institute of the Plastics Industry (London and District Section), at British Industries House, Marble Arch, W.1, at 7.30 p.m. C. M. Hamilton, "The Application of Some Plastics to the Cable Industry."

University of London, at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, at 5.30 p.m. Professor Artturi I. Virtanen, "Biological Nitrogen Fixation: The Chemical Mechanism of the Nitrogen Fixation."

Institute of Rubber Industry in the Assembly Hall of the Royal Empire Society, Northumberland Avenue, W.C.2, at 7.30 p.m. Joint meeting with the Oil and Colour Chemists' Association. Discussion on "Pigments: Dye, Lake and Mineral for Rubber."

November 9.—Institution of Chemical Engineers at the Rooms of the Geological Society, Burlington House, Piccadilly, W.1, at 6 p.m. C. H. Boyd, "The Special Areas of England and Wales: Technical and Economic Aspects of the Commissioner's Work."

November 11.—Institute of Chemistry, at 30 Russell Square, W.C.1, at 8 p.m. W. A. S. Calder, Ninth Gluckstein memorial lecture, "Chemist's Progress."

November 17.—Electrodepositors' Technical Society, at the Northampton Polytechnic Institute, St. John Street, E.C.1, at 8.15 p.m. Annual meeting and presidential address.

Institution of Civil Engineers, at Great George Street, S.W.1, at 6.15 p.m. A. R. Collins and Sir E. O. Williams, "The Workability of Concrete." Students meeting.

Manchester.

November 8.—Institute of the Plastics Industry (Northern Section), at the Engineers Club, 17 Albert Square, at 7.15 p.m. J. L. Daniels, "Generation and Transmission of Hydraulic Power."

November 17.—British Association of Chemists, at Engineer's Club, Albert Square. Col. Garforth, "Air Raid Precautions."

Stoke-on-Trent.

November 8.—Ceramic Society (Pottery Section), at the North Staffordshire Technical College, at 7.30 p.m. A. J. Dale, "Impurities in Water: Their Importance to the Potter."

Derby.

November 9.—British Association of Chemists, at the Technical College, Green Lane. Lt.-Col. Alan Laurie, "Chemical Warfare."

Newcastle.

November 9.—Institute of Chemistry (Newcastle and North-East Coast Section), Society of Chemical Industry and Institute of Metals: Visit to Imperial Chemical Industries, Ltd., Coal Hydrogenation Plant, Billingham.

Sheffield.

November 9.—Society of Glass Technology. 21st Anniversary Celebrations. 12.45 p.m., Luncheon at the Grand Hotel. 3.15 p.m., Functions at Elmfield. 6 p.m., Presidential address at the Chemistry Lecture Theatre, The University. 7.45 p.m., Informal dinner at the Grand Hotel.

November 12.—Chemical Society in the Chemistry Department of the University, at 5.30 p.m. Professor J. Read, "An Hour Among the Alchemists."

Liverpool.

November 11.—Institute of Chemistry, joint meeting with the Liverpool Section of the Society of Chemical Industry, at the Constitutional Club, India Buildings, Water Street, at 7.30 p.m. G. Thompson, "Our Newspapers—From Forest to Fireside."

November 17.—British Association of Chemists at the University, at 7.30 p.m. H. E. Potts, "Patents."

Edinburgh.

November 12.—Institute of Chemistry (Edinburgh and East of Scotland Section) at the North British Station Hotel. Dr. J. P. Baxter and J. G. Moore, "The Properties of Chlorinated Rubber."

Birmingham.

November 15.—Chemical Society, in the Chemisty Lecture Theatre of the University, Edgbaston, at 5 p.m. Professor J. M. Gulland, "Nucleic Acids."

Leeds.

November 15.—Institute of Chemistry at the University. Major General C. H. Foulkes, "Chemical Warfare and the Civil Population." Annual General Meeting.

Hull.

November 16.—Hull Chemical and Engineering Society, at the Lecture Room, Municipal Technical College, Park Street, at 7.45 p.m. R. E. W. Butt, "Air Conditioning."

Company News

Horlicks, Ltd., are paying an interim of 6¾d., less tax, for the year to March 31, 1938, payable November 18 to holders registered October 29. It is hoped to pay another interim in 1938, followed by final after next meeting.

A. Boake, Roberts and Co., manufacturing chemists, announces second interim of 1½ per cent., free of tax (1 per cent.).

Anglo-Continental Guano Works state that total profit for year ended June 30, 1937, was £78,058 (£95,584); deduct depreciation £8,661, debenture interest £16,000, etc., leaving £46,867. Final dividend of 3¾ per cent. on the ordinary shares, making 7½ per cent., less tax (same); balance of expenses of debenture issue written off, £30,018; forward, £16,431 (£42,707).

British Celanese, Ltd., report a fall in trading profits of £110,347, to £2,195,760 up to July 3 last. The amount earned for dividend has fallen from £364,508 to £247,078. The directors do not consider the time is yet opportune for bringing forward a scheme to deal with the dividend arrears on the 7½ per cent. second preference shares.

The British Match Corporation has declared an interim dividend of 2¾ per cent., less tax, on the £6,187,500 ordinary shares, payable on November 16. For the past two years similar interims have been followed by finals of 5 per cent., making 7¾ per cent., less tax, each year. The usual dividend on the £535,000 5½ per cent. cumulative preference shares is also announced.

The Shell Union Oil Corporation announces net earnings of $7,503,291 for the third quarter of 1937. This is an increase of $293,061 on the corresponding figure for 1936, and compares with $4,806,447 for the previous three months. Gross earnings rose to $71,460,419 from $66,159,966 in 1936. The balance of income, before providing for interest and Federal tax, is raised $465,258, to $9,060,270.

Lancegaye Safety Glass (1934), Ltd., announces an interim of 7 per cent., less tax, in respect of the year ending March 31, 1938, payable on November 15 on an issued capital of £163,918 as increased in February last. A similar payment was made at this time last year, followed by a second interim of a like amount, a final of 6 per cent. and a bonus of 4 per cent., making a total distribution for the year of 24 per cent. This compares with 6 per cent. on a reduced capital for the year to March 31, 1936.

Lewis Berger and Sons, Ltd., paint and varnish manufacturers, show a further expansion in net profits of £9,930, to £157,057 in the accounts to end of July. Trading profits rose from £83,468 to £87,149 and £7,423 more at £82,346 was received in dividends from subsidiaries. Total income for the year was £171,057 compared with £161,761 for 1935-36. A sum of £5,000 is again deducted for depreciation and £4,000 against £3,500 for tax, including provision for N.D.C. The dividend is maintained at 16 per cent., less tax.

The International Nickel Co. of Canada has announced a final dividend on the common stock of 50c., plus an extra disbursement of 25c. At this time last year 40c. per share was declared. Three quarterly dividends of 50c. have already been paid, so that the total distribution for 1937 is $2.25 per share. For the year ended December 31, 1936, the Common stockholders received 95c. less at $1.30 per share, which compared with 75c. per share for the preceding year. The net profits of the company for 1936 amounted to $36,865,526—an increase of $10,778,999.

The Imperial Smelting Corporation, for their report for the year ended June 30, 1937, confirms the good impression created by the resumption of ordinary dividends. Dividends and interest received have risen by £107,958 to £275,829, and after deducting £13,086, against £5,444, for tax, which includes provision for N.D.C., the net profits are £97,256 up at £122,554. The directors recommend a dividend of 5 per cent. on the ordinary shares—the first since a similar payment for 1929-30—which leaves £70 627 to go forward, compared with £69,314 brought in.

The British Oxygen Co., Ltd., in an interim statement, discloses that results for the year to date are again a record. Although this would justify an increased interim dividend, the directors add, they have decided to postpone the question of a higher distribution or a capital bonus until the final results for 1937 are available. As a result of this decision, the interim dividend is maintained at the same level as in the past two years—7 per cent. or 1s. 4.8d. per £1 unit of stock, less tax—payable to stockholders registered at the close of business on November 2. Last year's interim was followed by a script bonus of 6¾ per cent., and the final dividend of 8 per cent. was paid on the increased Ordinary capital of £2,841,252. Dividend warrants will be posted on November 23, payable next day.

Books Received

Weeds, Weeds, Weeds. By Sir Charles V. Boys. Pp. 71. London: Wightman and Co., Ltd. 1s.

A History of Pharmacy. By James Grier. Pp. 274. London: The Pharmaceutical Press. 6s.

Decennial Index of the Analyst. Compiled by M. B. Elliott. Cambridge: W. Heffer & Sons, Ltd. Pp. 467. 25s.

Principles of Chemical Engineering. By W. H. Walker, Warren K. Lewis, W. H. McAdams and E. R. Gilliland. Third Edition. Pp. 749. London: McGraw-Hill Publishing Co., Ltd. 30s.

New Companies Registered

Harding & Macchi, Ltd. (333,201).—Private company. Registered November 1. Capital £300 in 300 shares of £1 each. To carry on the business of manufacturing chemists, manufacturers of cosmetics, perfumery, etc. Directors: Noah A. Harding, "Up-Auver," Braddens Hill Road, E. Torquay, Devon; Reuben N. Harding, "Westwood-Ho," Imperial Road, Exmouth, Devon; Geo. V. Macchi, 489 Fulham Road, W.6. Solicitors: Bond & Banbury, 53 Broadway, Ealing, W.5. Registered Office: 151 Oxford Street, W.1.

Filling Machines, Ltd.—Private company. Registered in Edinburgh, October 20. Capital £6,000 in 4,000 preference and 2,000 ordinary shares of £1 each. To carry on the business of makers of, dealers in and exporters and importers of special and standard machines for filling and packing dry goods, powders, liquids and plastic materials, etc. Directors: Ian C. Cowan, 29 Falkland Mansions, Glasgow, W.2; James Dobie, Renfield, Beith Road, Elderslie; Andrew Wilson, 25 Springfield Park Road, Burnside, Rutherglen. Registered office: North Hillington, Renfrewshire.

Egyptian Manufacturing Company, Ltd.—Private company. Registered October 22. Capital, £2,000 in 2,000 shares of £1 each. To carry on the business of manufacturers of and dealers in perfumery, oils, soaps, scents, alcohol, drugs, pharmaceutical specialities, yarns, textiles, rubber articles, etc. Directors: Humbert C. Albini, 83 Avenue Sidky Pasha, Bulkeley, Alexandria; Decio Ball, 62 Rue Ambroise Ralli, Ramleh, Alexandria, and George Morpurgo, Rue Joseph Adda, City Adda, Alexandria. Solicitors: Wm. Webb and Sons, Suffolk House, E.C.4. Registered office: 36 Lincoln's Inn Fields, W.C.2.

Askwood, Ltd. (333,147).—Private Company. Registered October 30. Capital £1,000 in 10,000 shares of 2s. each. To carry on the business of manufacturing and analytical chemists, druggists, importers and manufacturers of and dealers in pharmaceutical, medicinal, chemical, veterinary, industrial and other preparations. Directors: Margaret M. Wood, 60 Perham Road, W.14; Wm. G. Asquith, St. Margarets, 13 Dorking Road, Epsom (director, Astren Manufacturing Co., Ltd.); Gweneth K. Evenden, Windy Ridge, The Woodfields, Sanderstead, Surrey. Registered Office: 444 High Road, Streatham, S.W.16.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

MASHABA RHODESIAN ASBESTOS CO., LTD., London, E.C. (M., 6/11/37.) Oct. 21, £1,000, £4,000 and £500 debentures, parts of a series already registered. January 13, 1937.

Satisfactions

R. CRUICKSHANK, LTD., Birmingham, chemical manufacturers, etc. (M.S., 6/11/37.) Satisfaction Oct. 26, £4,000 registered June 19, 1902.

HARRISON BLAIR AND CO., LTD., Kearsley, chemical manufacturers. (M.S., 6/11/37.) Satisfaction October 22, £10,000, registered December 18, 1926.

PHOSPHOR BRONZE CO., LTD. (formerly New Phosphor Bronze Co., Ltd.), London, S.E. (M.S., 6/11/37.) Satisfaction October 26, of debentures registered May 14, 1910.

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CLASSIFIED SECTION

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